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ABSTRACT

The environmental education activities presented in this curriculum guide are experimental in nature and, therefore, it is suggested they be developed in the following sequence: exploration, discussion, and application. Also, the three types of activities should incorporate experiences which are direct, simulated, audio-visual, visual, audio, and abstract. Based on these directives, activities are written for two levels. Section One for grades 9-12 covers environmental activities in the areas of art, home economics, language arts and reading, math, science, and social studies. Each unit denotes its title, grade level, content area, concepts, performance objectives, activities, discussion topics and questions, resources (or materials needed), and evaluation procedures, followed by a list of resource or reference materials and a rating scale or checklist. Section Two for grades K-8 and Section Three for grades 5-8 utilize a similar format. In addition to the six previous subject areas, a few units also incorate activities related to music, health, and physical education. Approximately 30 units are suggested in each section. This work was prepared under an ESEA Title III contract. (BL)

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ENVIRONMENTAL EDUCATION

CURRICULUM GUIDE

EXPERIMENTAL DRAFT

Rockcastle County High School
Grades 9 - 12

ESEA Title III
Region V
Tradewind Center
Somerset, Kentucky 42501
July 1973

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Key to Publishers, Producers, and Distributors

PREFACE

This curriculum guide is an experimental first draft to be pilot tested and modified during the 1973-74 school year. After pilot testing of the curricular activities and validation of evaluation instruments, the revised guides will be available to other schools.

The student activities in this curriculum guide should be developed with the following three part sequence.

Exploration -- This is a showing experience. Let students view pictures, films, actual environment relative to the concept being taught. Students investigate, read, etc.

Discussion -- Questions should be directed to students to assist them to expand their observations and awareness about their exploratory experiences. Students should be afforded the opportunity to share and discuss their experiences.

Application -- The application of the concepts should be utilized in the discipline areas. This type activity should lead to drawing conclusions, making decisions, problem solving. Application in the final activities that reinforce all others should produce tangible results of the students' efforts.

Each of the three above types of activities should be developed, incorporating as many as possible of the following experiences in priority order, with highest priority commencing with a and continuing through f.

a. Direct experience-- An experience where the student is allowed to be an active participant.

b. Simulated experience-- Where the student uses imagination, such as role playing, pretending-simulation games, dramazation, etc.

c. Audio-visual experience-- Use of sound films, filmstrips with recorded scripts, television, etc.

d. Visual experience-- Identification of the concept by sight using pictures, filmstrips, etc.

e. Audio experience-- The formation of mental images based on sound; use of records, tape recording and sometimes radio can be utilized.

f. Abstract experience-- Consists of teacher explanation, lectures, etc.

BASKET WEAVING WITH NATURAL RESOURCES

Unit 1

Grade Levels: 9-12

Content Area: Art

Concepts:

1. Basket woven mats are useful.
2. Baskets may be woven of natural materials.
3. Basket weaving is an old and useful art.

Performance Objectives:

By the end of the session, participating students will:

1. Respond with a positive score of 3.0 or better on a 5.0 attitude checklist.
2. Will apply skills of artistic weaving with natural materials by producing a finished product meeting standards of quality established by the teacher.

Activities:

1. Field trip to location where reeds, cone, willow twigs, long grasses or long pine needles may be found to be used in weaving.
2. Have students imagine they are early pioneers and must discover materials to weave baskets that are needed to hold. Have them list materials they might find that would be useful to weave baskets.
3. Show a film that has baskets of different types, that are used in the home today - ornamental as well as useful.
4. Have students bring from home examples of baskets they are familiar with.
5. Have students read literature of early Indians and relate the literature to basketry of tribes (as Hopi, etc.)
6. Have students list materials, other than natural materials, that can be useful to weave a mat or basket.

Discussion:

1. What purpose can baskets serve?
2. Does a basket necessarily have to be useful?
3. What materials can we find today, in natural form, that can be used in weaving a mat or a small basket?
4. What shapes can you use in weaving a basket?
5. Why is the basket strong?
6. Can all materials be used as they are found or must they be treated in some way? What ways?
7. How are baskets decorated?
8. What tools will we need to gather materials and complete baskets?
9. Discuss terms and types of basket weaving as wicker weave, twined, and three-ply or plaited warp spokes and awl.

Application:

1. Have students plan and weave a shallow basket, or mat, using natural materials such as willow, corn shucks, leaves of cat tails, or pine needles.
2. Have students to weave a small round basket using natural materials.

Resources:

1. Knife
2. Pail for water to soak materials
3. Strong pair of scissors
4. Awl (or steel knitting needle)
5. Filmstrip

Evaluation Procedures:

1. Administer rating scale.
2. Maintain record of students meeting objective #2.
3. Teacher brief narrative evaluation.

BASKET WEAVING WITH NATURAL MATERIALS

RESOURCES

Books:

Blumenau, L., Art and Craft of Hand Weaving, New York, Crown, 1955

Horn, G., Crafts for Today's Schools, Worchester, Mass., David Publications, 1973

Rainey, S., Weaving Without a Loom, Worchester, Mass., Davis Publications, 1973

Audiovisual:

Resources - Additional

BASKET WEAVING WITH NATURAL MATERIALS

- Rating Scale -

Below are activities you did during our study of weaving with natural materials. Please rate each activity as to how well you like it by circling the numbers 1 to 5 that represent your feelings.

1 - Hated it
2 - Not too good
3 - Fair
4 - Good
5 - Great

1. Gathering natural materials. 1 2 3 4 5

2. Viewing films and filmstrips. 1 2 3 4 5

3. Study about pioneers. 1 2 3 4 5

4. Studying about Indians. 1 2 3 4 5

5. Weaving of baskets. 1 2 3 4 5

WOOD SCULPTURE

Unit 2

Grade Levels: 9-12

Content Area: Art

Concepts:

1. Wastewood are satisfactory materials for woodcarving.
2. Woodcarving is considered an art.
3. Woodcarving involves design and techniques.
4. Some woods are more suitable for carving.

Performance Objectives:

1. By the end of the session on wood sculpturing, participating students will demonstrate their:
   a. use of woodcarving tools
   b. care and sharpening
   c. knowledge of different types of wood best suited for carving
   d. skills of woodcarving

   by the application of those skills by completing acceptable carved designs.
2. At the conclusion of the wood sculpture sessions, participating students will respond favorably to the activities by writing a brief narrative description of how well they liked them.

Activities:

1. Students will participate in field trip to a wooded area where they can observe different types of trees. Visit local lumber yard to observe different types of wood in refined form.
2. Students make rubbings of different tree barks for recognition purposes.
3. Show filmstrips and review resources of woodcarving compared to simple whittling.
4. Bringin examples of different types of wood as to soft and hard woods, textures, let students feel roughness and weight of wood.
5. Identify occupations associated with wood working.
6. Comtemplate how woodcarving was once a vital way of life to the early pioneers as all of his tools were carved, also furniture. Bible uses woodcarving.
7. Teacher explains qualities of wood, techniques used, suitable wood to design (is design simple or too complicated), tools needed and the need to use all safety precautions. Wood grain open or closed.
8. Bring in a local wood carver to talk and demonstrate woodcarving as he knows it.

Discussion:

1. How necessary is wood to our daily lives?
2. Have students discuss the characteristics of wood as to grain, whether it is closed or open, soft or hard, dark or light, and the suitability of the wood to carving and give reasons why they chose the wood.
3. Discuss the limitations of types of wood as to location and expense.
4. Is the carving to be used outdoors or in? How does this affect the finish?

5. Is the carving to be handled or used or is it to be purely decorative? Is it to be flexible or rigid?
6. What woods withstand weathering?
7. Teacher discusses need for safety measures since working with sharp instruments can be dangerous.
8. Discuss the need for conservation of wood as the forests are being depleted by expanding population and expansion of buildings. How we can use waste products from lumber yard and building sites to procure necessary wood pieces to be carved.
9. Discuss carving in relief.

Application:

1. Wood working (student Ind. Arts) can implement carving skills into finished products.
2. Describe fine wood carving tools and their use.
3. Describe process of sharpening tools.
4. Demonstrate safety principles.
5. Plan and carve a simple object such as neckerchief ring, totem, an animal figure or letter opener.
6. Plan and carve in a low relief a design on a simple object such as plaque, book-ends or small box. Prepare for stain, paint or other finish.

Resources:

1. Wood
2. Chisels
3. Knives
4. Sandpaper
5. Filmstrip
6. Filmstrip Projector
7. Wood sample kit
8. Stone for sharpening knives
9. Gauge
10. Coping saw
11. Carpenter's vise

Evaluation Procedures:

1. Teacher evaluation of completed carvings.
2. Student narrative responses.
3. Teachers brief written narrative.

WOOD SCULPTURE

RESOURCES

Books:

Di Valentin, M., Sculpture for Beginners, New York, Sterling, 1969

Gross, C., Technique of Wood Sculpture, New York , Arco, 1965

Hunt, B., Contemporary Carving and Whittling, Milwaukee, Wis., Bruce, 1967

Leeming, J., Fun With Wire, Philadelphia, Lippincott, 1956

Leeming J., Fun With Wood, Philadelphia, Lippincott, 1942

Meilach, D., Creative Carving, Chicago, Ill., Reilly, 1969

Meilach, D., Contemporary Art With Wood, New York, Crown, 1968

Struppeck, J., Creation of Sculpture, New York, Holt, 1952

Wilcox, D., Wood Design, New York, Watson, 1968

Audiovisual:

Filmstrips/Cassette	1 set of 6	The Modern Craftsman	(series)	AIDS
		Glassmaker		
		Potter		
		Cabinet Maker		
		Graphics Designer		
		Textile Designer		
		Silversmith		
	1 set of 5	Fine Artists At Work	(series)	AIDS
		Stone Carver		
		Wood Engraver		
		Acrylic Painter		
		Metal Sculptor		
		Water Colorist		

Resources - Additional

ART WITH CLAY

Unit 3

Grade Levels: 9-12

Content Area: Art

Concepts:

1. Clay is found almost everywhere.
2. Pottery began with primitive man.
3. Pottery has a language of its own.
4. There are many methods of constructing an acceptable pottery form.

Performance Objectives:

At the conclusion of the "Art With Clay" activities, participating students will:

1. Apply the following skills acceptable to the teacher as determined by a skills checklist.
   a. Wedging clay
   b. Uniform thickness
   c. Proper consistency (moisture content)
   d. Trimming of a leather dry piece
   e. Firing procedures
   f. Glazing procedures
2. Respond favorably by writing a brief resume of what they liked best.

Activities: Exploration For Field Trip

1. Have students bring container in which to hold clay and see if they can find deposits of local clay that have qualities to make good pottery: (a) plasticity, (b) porous, and (c) vitrification properties.
2. The students will look through advertising magazines in library from dealers of ceramic materials and list different types of clay that can be purchased for specific types of ceramic pieces.
3. The students will see a film or filmstrip on clay, its properties, and methods of preparing clay.
4. Take students to a local pottery plant and let them observe the construction of a ceramic piece from clay ball to finished glazed, fired piece (as at Waco, Kentucky).
5. Bring examples of pottery in different stages of completion.
6. Discuss scope of the ceramics industry in the United States and tell some items produced other than craft ware.

Discussion:

1. What purposes do we make use of ceramics today?
2. What do you think we can use the clay we dug up for?
3. Does the clay need refining? How?
4. Compare primitive man's usage of pottery with today's uses.
5. What new words can be used (such as slip, wedge)?
6. In advertising magazines, did you find different types of clay listed? Did you see any decorative methods you would like to use?
7. In the filmstrip did the preparation of clay to ready it for use remind you of any food preparation process (wedge and kneading as bread)?

8. Do any pottery forms or decorative methods appeal to you aesthetically?
9. How may pottery be decorated (color and other than color)?
10. How many types of pottery are found in the home (dishes, vases, etc.)? What properties and ingredients of a good clay body are necessary for craft pottery?

Application:

1. Have students submit two drawings of pottery forms on paper 8½" X 11". One should be a recognized type, such as American Indian, Greek or Chinese; other of own design.
2. From the drawings by students have class evaluate the drawings as to design, difficulty of construction and methods.
3. Have class discuss meaning of pottery terms as applied to potterys such as bat, wedging, throwing leather-dry, bone-dry, green ware, bisque ware, terra cotta, grog, slip, earthenware, glazing, stoneware, porcelain, pyrometric cone, firing, etc.
4. Have class construct the following projects:
   a. pinch pot - flat dish or shallow bowl
   b. slab method - box or similar container
   c. slab method - 4 or more tiles with decorative design
   d. coil method - vase or deep bowl
   e. sculpture construction - human head, animal or decorative book ends

Resource Materials:

1. Kiln
2. Clay and clay storage
3. Slip
4. Wedging board
5. Glazes
6. Clay modeling tools
7. Sponges and bowls for water
8. Wire to clay piece from bat
9. Bats
10. Whirler
11. Filmstrip
12. Materials catalogs
13. Filmstrip projector
14. Handouts of terms and process

Evaluation Procedure:

1. Teacher maintain skills checklist.
2. Teacher retain student written comments.
3. Teacher write brief narrative of unit effectiveness.

ART WITH CLAY

RESOURCES

Audiovisual:

Filmloops	Clay Sculpture	EBE
Filmstrips	Clay Figures Clay Pottery Modern Craftsman	IFC IFC AIDS

(Resources - Additional)

ART WITH CLAY

CHECKLIST

Name 1 2 3 4 5 6 7

1. Wedging clay
2. Uniform thickness
3. Proper consistency (moisture content)
4. Trimming of a leather dry piece
5. Firing procedures
6. Glazing procedure
7. Required number of finished pieces

PHOTOGRAPHY AND YOUR COMMUNITY Unit 4

Grade Levels: 9-12 Content Area: Art

Concepts:

1. Photography can be used to record a variety of activities.
2. You can use photography to initiate and document community action.
3. Through photography you can promote a community awareness of pollution.
4. Photography can record the processes of decay, both natural and man made.

Performance Objectives:

1. Participating students will apply skills of using the camera by producing number of photographs meeting standard of quality established by a teacher checklist.
2. By the end of the session the participating students will comprehend the mechanical operation of a camera to the extent they can define the various parts and their functions as demonstrated by the teacher.

Activities:

1. Have students bring examples of pictures that they consider tobe good in terms of clearness, well lighted or examples of blurred, fuzzy, or too dark.
2. Have students investigate the reasons some prints are too dark or fuzzy, and what causes pictures to be clear and unblurred.
3. Teacher will demonstrate the parts of the camera, as lens and shutter, distance from subject, choice of subject, focusing of the camera, lighting and care of photograph.
4. Have students do research on history of camera and photography and compare old photographs as Brady's photographs during Civil War, old photos of White House, with photography today.
5. Have local studio photographer talk and demonstrate lighting and camera techniques.

Discussion:

1. Tell what makes a good picture, such as choice of subject, background and viewing angle, as well as good composition, lighting focus, and camera handling.
2. Why do we need to take pictures of water pollution and soil erosion?
3. Does the camera angle have any real relation to the picture?
4. How do pictures of solid waste and litter pollution relate to your community?
5. Can these pictures be used in any way to cause your community to become more aware of the need to clean up?
6. Discuss differences in slides, prints, and moving pictures.
7. Discuss the care to be taken of your camera and film.
8. Investigate careers in photography.

Application:

1. Take at least five pictures of solid waste and litter areas that affect your community.
2. Take at least five pictures of water pollution or abuse of water rights that could lead to water shortage in your community.
3. Take at least three pictures that show evidence of air pollution.
4. Take at least 5 pictures showing evidence of decay either natural or man-made.
5. Take at least 50 feet of movie film depicting the need for community action to eliminate litter and pollution in the community.

Resources:

1. Camera
2. Film
3. Projection screen
4. Developing of film
5. Tripod
6. Handout of photographic terms
7. Movie camera
8. Movie projector

Evaluation Procedures:

1. Administer rating scale as to sharpness, subject, background, viewing angle, focus, and camera handling.
2. Maintain record of students meeting objective.
3. Teacher brief narrative evaluation.

PHOTOGRAPHY AND YOUR COMMUNITY

RESOURCES

Books:

Boucher, P., Fundamentals of Photography, Princeton, New Jersey, Van Nostrand, 1963

Deschin, J., Photography in Your Future, New York, MacMillian, 1965

Dolan, E., Camera, New York, Messer, 1965

Feininger, A., Basic Color Photography, Englewood Cliffs, New Jersey, Prentice-Hall, 1972

Feininger, A., Complete Photographer, Englewood Cliffs, New Jersey, Prentice-Hall, 1965

Feininger, A., Successful Color Photography, Englewood Cliffs, New Jersey, Prentice-Hall, 1966

Gillelan, G., Young Sportman's Guide to Photography, Camden, New Jersey, Nelson, 1964

Hillson, D., Photography, New York, Doubleday, 1969

Keppler, V., Your Future in Photography, New York, Richards Rosen, 1965

Miller, T., This is Photography, New York, Doubleday, 1963

Neblette, C., Photography, New York, Doubleday, 1969

Sussman, A., Amateur Photography Handbook, New York, Crowell, 1965

Audiovisual:

Filmstrips	Photographic Darkroom Procedures Series	McGraw
Filmstrips/Records	Careers in Photography	Listening Library
FS/REC	Understanding Photography	EDC

Resource - Additional

PHOTOGRAPHY AND YOUR COMMUNITY

CHECKLIST

Name 1 2 3 4 5 6

1. Sharpness of photograph
2. Subject
3. Background
4. Viewing angle
5. Focus
6. Camera Handling

DESIGN WITH FOUND MATERIALS

Unit 5

Grade Levels: 9-12

Content Area: Art

Concepts:

1. Design may be created with many different materials.
2. Elements from nature may be incorporated into design.
3. Design in nature is structurally geometric.

Performance Objectives:

By the end of the session on design, participating students will:

1. Apply skills of creating a design from nature with materials incorporating the basis elements of design as determined by the teachers' judgement.
2. Respond with a positive attitude toward the design activities with a minimum of 3.0 on a 5.0 attitude scale.

Activities:

1. Students will go on a field trip to find materials to incorporate into their designs.
2. Students will bring examples of design to class to compare the basic elements of design as color, line, texture.
3. Look in magazines for examples of design found in their environment as leaves, buildings, flowers, trees, streets, materials.
4. Show filmstrips depicting structual design - interior, exteriors, nature.
5. Students will create an object with materials found in nature, incorporating some of natures' designs into created objects.

Discussion:

1. How can we use the materials we found to create a design?
2. Must the object we create be useful or can it be merely decorative? Could it be both decorative and utile?
3. How does nature provide design in our environment?
4. What constitutes a good design?
5. May we use different types of articles in one design?
6. What geometric shapes can be found in nature design?

Resources:

1. Filmstrips on building interior and exterior.
2. Natural materials to be collected.

Evaluation Procedures:

1. Administer attitude checklist.
2. Teacher narrative evaluation.

DESIGN WITH FOUND MATERIALS

RESOURCES

Books:

Ballinger, L., Design - Sources and Resources, New York, Reinhold, 1965

Calkens, C.J., Crafting with Nature's Materials, New York, Arco, 1968

Engel, G., How to Make Ceramics, New York, Arco, 1968

Horn, G., Art For Todays School, Philadelphia, Davis, 1967

Jaeger, E., Nature Crafts, New York, MacMillian, 1950

Meilach, D., Creating With Plaster, Chicago, Reilly, 1966

Nagle, A., Fun With Nature Craft, Philadelphia, Lippincott, 1964

Rasmusen, H., Sculpture from Junk, New York, Reinhold, 1967

Stribling, M., Cut From Found Materials, New York, Crown, 1970

Audiovisual:

Filmloops	Design With Wire	Hester
Filmstrips	Introducing Art Tech. Group I Clay Figures Clay Pottery Creative College Hand Puppet Finger Painting Paper Mosaics	IFC
	Group II Cardboard and Collagraph Printing Leaf and Clay Painting Linoleum and Woodcut Printing Silk Screen Printing String and Glue Printing Vegetable and Godget Printing	
Filmstrip/Cassette	Painting Techniques	EUC
	Artist At Work	EUC

Resources - Additional

DESIGN WITH FOUND MATERIALS

Checklist

Below are some activities you participated in during our study of design with nature materials. Please circle the number that best expresses your feelings toward each activity. The representative numbers are:

1 - Disliked
2 - Poor
3 - Fair
4 - Good
5 - Excellent

1. Field trip - gathering materials. 1 2 3 4 5

2. Looking up examples of design in magazines. 1 2 3 4 5

3. Viewing filmstrips. 1 2 3 4 5

4. Making your own design from natural materials. 1 2 3 4 5

WILD FOODS AND HERBS

Unit 6

Grade Levels: 11 and 12 Content Area: Home Economics

Concepts:

1. Our community has many wild foods and herbs that are edible.
2. Use of wild foods and herbs add to nutritional value of meals.
3. Food cost can be cut by using wild foods and herbs.

Performance Objectives:

1. By the end of this activity, the students will be able to apply procedures of identification of wild foods and herbs.
2. They will be able to apply skills of preparing attractive and nutritional dishes using these foods.
3. Students will comprehend how daily food cost can be cut by using these wild foods and herbs as measured by a teacher made test.

Activities:

1. Field trip with parents or conservationist who are familiar with wild plants.
2. Students will collect and study edible wild foods and herbs in their community that are available.
3. Have students to bring in old family cookbooks and new recipes using some of these foods. Teacher will make available additional recipes.
4. Panel discussion including all studonts on ways these plants could be used in daily diet.
5. Teacher deomonstration of dish and/or dishes using one of these foods and/or herbs. Students will be the judge.
6. Students will prepare a meal using some of these foods and herbs that are local.
7. Students will keep cost records of foods prepared and compare with cost of liked foods bought in the grocery.

Discussion:

1. What are some edible wild plants and herbs that are available in our community?
2. How can some of these wild foods and herbs be used in preparing meals?
3. Where can these recipes be obtained?
4. What are some of the edible dishes that may be prepared from these wild plants and herbs?
5. What nutritional values can these nature foods add to our daily diet?
6. What value would cost records serve?
7. What nature foods can be substituted to cut the daily food cost?

Resources:

1. Parents, conservationist, and others.
2. Cooking equipment.
3. Old family cookbooks and recipes.
4. Books:

a. Whole Earth Cookbook by Sharon Cadwallader and Judi Ohr. Houghton Mifflin Co., Boston, 1972
b. Using Wayside Plants by Nelson Coon. Hearthside Press Incorporated, 381 Park Avenue South, New York, N.Y. 10016, 1969.
c. Stalking the Healthful Herbs by Raymond W. Rose, David McKay Co., Inc., New York, N.Y., 1966.
d. A Garden of Herbs by Eleanor Sivelaic Rohde, Dover Publications Inc., New York, N.Y., 1969
e. People and Their Environment: Teacher's Curriculum Guide to Conservation Education, J.G. Fergurson Publishing Co., 6 North Michigan Avenue, Chicago, Ill., 60602.

Evaluation:

1. Teacher will give an identification test on wild foods and herbs.
2. Students will use score sheets to evaluate dishes prepared from these nature foods.

WILD FOODS AND HERBS

RESOURCES

Books:

Budge, Divine Origins of the Crafts of the Herbalist, Detroit, Gale Research Co.

Carroll, A., Health Food Dictionary With Recipes, Englewood Cliffs, New Jersey, Prentice Hall, 1972

Culpeper, N., Culpeper's Complete Herbal, New York, Sterling, 1973

Doole, L.E., Herb Magic and Garden Craft, New York, Sterling, 1973

Fox, H.M., Gardening With Herbs, New York, Sterling, 1971

Haynes, I., What's Cooking in Kentucky, Kansas City, 1971

Henis, D., Adventure in Good Cooking, Kentucky, 1971

Hunter, K., Health Foods and Herbs, New York, Arco Publishing Co., 1968

Law, D., Herb Growing for Health, New York, Arco, 1969

Lucus, R., Magic of Herbs in Daily Life, Englewood Cliffs, New Jersey, Prentice Hall, 1972

Mazza, I., Herbs for the Kitchen, New York, Arco

Meyer, J.E., Herbalist, New York, Sterling, 1971

Pritzker, W., Natural Foods, New York, Arco

Romanne, J., Herb Lore of Housewives, Detroit, Gale Research Co.

Audiovisual:

Filmstrips/Record

4 FS/REC	Survival Through Wild Plants	AIDS

Resources - Additional

WILD FOODS AND HERBS

RESOURCES

Books:

Budge, Divine Origins of the Crafts of the Herbalist, Detroit, Gale Research Co.

Carroll, A., Health Food Dictionary With Recipes, Englewood Cliffs, New Jersey, Prentice Hall, 1972

Culpeper, N., Culpeper's Complete Herbal, New York, Sterling, 1973

Doole, L.E., Herb Magic and Garden Craft, New York, Sterling, 1973

Fox, H.M., Gardening With Herbs, New York, Sterling, 1971

Haynes, I., What's Cooking in Kentucky, Kansas City, 1971

Henis, D., Adventure in Good Cooking, Kentucky, 1971

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Audiovisual:

Filmstrips/Record

4 FS/REC	Survival Through Wild Plants	AIDS

Resources - Additional

Evaluation of Wild Food & Herbs

Write name of dish prepared under the column, labeled "food" and write in the characteristics of the food that are good, fair, poor.

Food	Good	Fair	Poor	Remarks

What did we do well today?
1.____________________
2.____________________
3.____________________
4.____________________
5.____________________

What will we do better next time?
1.____________________
2.____________________
3.____________________
4.____________________
5.____________________

WILD FLOWERS

Unit 7

Grade Level: 9

Content Area: Reading
High Interest -
Low Vocabulary

Concepts:

1. Wild flowers add beauty to our environment.
2. Wild flowers can be cultivated.
3. The natural environment for wild flowers can be maintained.
4. Wild flowers have many useful functions.

Performance Objectives:

By the end of the study of wild flowers slow reading 9th grade students will:

1. Comprehend the following instructional variables by scoring a minimum of 75% on a teacher made test:
    a. habitats
    b. useful functions
    c. propagation
    d. seasonal influence
    e. seed distribution
    f. identification
    g. essentials for growth

Activities:

1. Prepare a study sheet for each child to learn the following:
    a. The value of wild flowers to people.
    b. How can we protect our wild flowers?
    c. How can we recognize wild flowers?
    d. How do seeds get transplanted from place to place?
    e. Can you tame wild flowers?
    f. How do flowers help conserve valuable soil?
    g. How do winds and water current help plants grow?
    h. How do birds scatter seeds?
    i. In what ways do animals help produce plants?
    j. Does it harm a plant to pick its flowers?
    k. What are the differences between annual perennial and biennial?
    l. How and when are plants transplanted?
    m. How does the herbarium and terrarium differ?
2. Let students bring wild flowers to class for identification study.
3. Take field trip in the woods behind the school.
4. Take a field trip around Lake Linville.
5. Let each student keep a flower notebook.
6. Let students frame pictures of wild flowers for classroom displays.
7. Let children make tissue paper pictures of flowers.
8. Experiment with flower beds.

Discussion:

1. Teacher give a narrative on the beauty of wild flowers.
2. Let students describe locations where flowers were found growing.
3. Discuss the flowers' contribution to the soil.

Materials and Resources:

1. Books
2. Filmstrips
3. Notebooks
4. Pencil and paper
5. Tissue paper
6. Glue
7. Colors
8. Spray paint
9. Plastic wrap
10. Card board
11. Poster paper
12. Flower beds

Evaluation:

1. Administer teacher made test.
2. Evaluate student notebooks.
3. Administer rating scale.
4. Teacher brief written narrative evaluation.

WILD FLOWERS

RESOURCES

Books:

Guilcher, J.M., Hidden Life of Flowers, New York, Sterling, 1973

Hutchins, R., This Is A Flower, New York, Dodd, 1963

Keera, J., Introduction to Wild Flowers, Garden City, Doubleday, 1965

Zim, H., Flowers, New York, Simon and Schuster, 1950

Filmloops: (8mm)

1	Desert Flowers	ICF
1	Flowers Opening	ICF

Filmstrip: (35mm)

1 set of 10	Wild Flowers of North America	EBE

Filmstrip/Cassette:

5 FS/REC	How Flowers Transfer Pollen	IFC

Study Prints:

1	Spring Wild Flowers - #sp.-102	SVE

Slides:

1	Plants and Flowers	NAS

Resources - Additional

WILD FLOWERS

- Rating Scale -

Below are statements about our study of Wild Flowers. Please circle the number that best expresses how you feel about each statement.

1 - Poor
2 - Fair
3 - Good
4 - Very good
5 - Great

1. Collecting wild flowers. 1 2 3 4 5
2. Taking field trips to observe wild flowers. 1 2 3 4 5
3. Keeping a flower notebook. 1 2 3 4 5
4. Studying and reading about wild flowers. 1 2 3 4 5
5. Framing wild flower pictures. 1 2 3 4 5
6. Making paper flowers. 1 2 3 4 5
7. Preparing a flower bed. 1 2 3 4 5

ANTS

Unit 8

Grade Level: 9

Content Area: Reading
High Interest -
Low Vocabulary

Concepts:

1. Ants have many similarities of other insects and small animals.
2. Ants differ in many ways from other insects and small animals.
3. Ants have organized instinctive behavior patterns.
4. Environmental conditions have great influences on the ants' survival.

Performance Objectives:

At the conclusion of the study of ants, 9th grade low reading students will:

1. Comprehend the organized life style of ants as demonstrated by 75% of the students submitting an acceptable written narrative description as judged by the teacher.
2. Collectively apply acquired skills by constructing a workable ant colony where the ants'behavior can be observed.
3. Apply skills of reading and recording information as demonstrated by 75% of the students producing a finished notebook according to the teachers'specifications.
4. Respond with a minimum positive score of 3.5 on a 5.0 attitude checklist.

Activities:

1. Read books of high interest and low vocabulary to find the following facts about ants:
    a. When do the winged ants fly?
    b. Who are their enemies?
    c. What does the queen do with her wings?
    d. What do the new larvae eat?
    e. What are "minims"?
    f. How do ants find food?
    g. How do the army ants live?
    h. What ants have slaves?
    i. How large are ants?
    j. How are some ants useful?
    k. What are ant farmers?
    l. How do ants protect their nests?
2. Take field trips to observe the ants in their own habitats.
3. Make an ant colony at school to observe.
4. Make a notebook about the findings.

Discussion:

1. Where are ants found?
    a. Kinds of places
    b. Kinds of soil
    c. Environmental conditions

2. Discuss the pattern of the ants to people in society.
3. Students discuss the ants' usefulness to society.
4. Students discuss the ants' problems to society.

Resource Materials:

1. Sand
2. Ant colony box
3. Notebooks
4. Books
5. Glass jars
6. Microscope
7. Poster-paper
8. Ants

Evaluation Procedure:

1. Evaluate student narratives.
2. Observe workable finished ant colony.
3. Evaluate student notebooks.
4. Administer attitude checklist.
5. Brief teacher written narrative.

ANTS

RESOURCES

Books:

Costello, D., World of the Ant, Philadelphia, Lippincott, 1968

Doering, H., An Ant Is Born, New York, Sterling, 1972

Goetsch, W., Ants, Ann Arbor, Mich., University of Michigan Press, 1957

Filmstrip: (35mm)

1	Ants, Bees, Wasps	EBE

Filmloop:

1	Ants: Tunnel Building	Doubleday

Filmstrip/Cassette:

1 set of 5	World of Ants	IFC

Study Prints:

1	Common Insect #sp101	SVE

Resources - Additional

ANTS

- Rating Scale -

Below are statements conerning our study of ants. Please circle the number that best expresses how you feel about each statement.

1 - Poor
2 - Fair
3 - Good
4 - Very good
5 - Great

1.	Reading about ants.	1	2	3	4	5
2.	Viewing filmstrips.	1	2	3	4	5
3.	Building an ant colony.	1	2	3	4	5
4.	Watching ants on our field trip.	1	2	3	4	5
5.	Keeping a notebook.	1	2	3	4	5

BEES

Unit 9

Grade Level: 9

Content Area: Reading
High Interest -
Low Vocabulary

Concepts:

1. The study of bees reveals much of our environmental design.
2. Bees are common to our environment.
3. Bees make a contribution to our society.
4. The study of bees is interesting reading.
5. Bees have unique characteristics.

Performance Objectives:

By the end of the study of bees, slow reading 9th grade students will:

1. Comprehend the following instructional variables by scoring at least 75% on a teacher made test:
    a. Identification of at least five varieties of bees as to their:
        1. characteristics
        2. temperament or characteristic behavior
        3. habitats
        4. life expectancy
        5. activities
        6. function of different types
        7. contributions
        8. compare behavior of bee to man
        9. methods of defense
2. Respond with a positive minimum score of 3.5 on a 5.0 attitude checklist.

Activities:

1. Read books on low level about bees to create interest for the following information:
    a. What is inside the wax castle?
    b. How many rooms does it have?
    c. What do the nurse bees do?
    d. Why do bees evaporate their honey?
    e. How many bees live in a hive?
    f. What is the job of the drone bee?
    g. What causes the "song of the hive"?
    h. How do bees keep their houses clean?
    i. How does a new bee get its food?
    j. How do the baby bees grow?
    k. What does a new worker do?
    l. How is beeswax made?
    m. What is the bee's tool kit?
    n. How do bees tell direction?
    o. How do bees communicate?
    p. Why does a bee die when it stings?
    q. What does the new queen look like?

r. Why does she kill her sister queen?
s. What happens to the old queen mother?
t. What is a swarm day?
u. What happens to the drones after mating?
v. How many eggs does the new queen produce?
w. What happens if the queen is taken away?
x. How long does the queen live?
y. How do stingless bees fight enemies?
z. How is a bumblebee like a mother bird?
aa. What are the bumblebees enemies?
bb. What are callorus?
cc. How is honey used by bees for defense?
dd. What is a carpenter bee?
ee. How do mason bees build their homes?
ff. What is a fig wasp?
gg. How many kinds of wasps are there?
hh. How do wasps help farmers?
ii. Why do some wasps drill into trees?
jj. What wasp is a hitchiker?
kk. How do hunter wasps feed their young?
ll. What do gail wasps do?
mm. When was paper originally made?
nn. How do wasps make paper?
oo. Where can wasps nest be found?
pp. What is a hornet?
qq. How do baby wasps live?
rr. How do the new wasps help in the nest?
ss. How are queen wasps produced?
tt. What happens to the wasps in the fall?

2. Bring in nest and hives of different bees.
3. Make a bee colony inside the classroom with glass tubes going to the outside.
4. Make a trip to places where clover and flowers are growing to watch the bees get nectar.
5. Take a trip to the farm where they have bee hives.
6. Visit old houses and barns to observe nest.
7. Have a farmer posted to call when bees are swarming; so as to go and observe.
8. Watch a beeman get the honey from a bee hive.
9. Have a party serving things made from honey.
10. Make notebooks about the field trips using all material possible.

Discussion:

1. How can we know that conditions have changed in the past years.
2. Changes in a more mechanized method of controlling bees to produce honey.
3. Ways of comparing the work of bees to human work.

Resource Material:

1. Study guides
2. Books about bees
3. Microscope
4. Magnifying glass
5. Books about flowers

6. Pencil, paper and notebook
7. Paints and colors
8. Tubes and hive for bee colony

Evaluation:

1. Teacher administered test
2. Administer rating scale
3. Teacher brief written narrative

BEES

RESOURCES

Books:

Doering, H., Bee is Born, New York, Sterling, 1972

Lindauer, M., Communication Among Social Bees, Cambridge, Mass., Harvard University Press, 1961

Filmloop: (8mm)

Super 8	Bumble Bee	ESB
Super 8	Bees Swarming	ESB

Filmstrips:

1	Ant, Bees and Wasps	EBE
1	Life of the Honeybee	SVE
1	Bee Society	Listening Lib.

Resources - Additional

BEES

- Rating Scale -

Below are statements concerning our study of bees. Please circle the number that best expresses how you feel about each activity.

1 - Poor
2 - Fair
3 - Good
4 - Very good
5 - Great

1. Reading about bees.	1	2	3	4	5
2. Collecting different bees' nests.	1	2	3	4	5
3. Making bee colony.	1	2	3	4	5
4. Watching bees collecting nectar.	1	2	3	4	5
5. Visiting a farm with bee hives.	1	2	3	4	5
6. Keeping a notebook.	1	2	3	4	5

TREES

Unit 10

Grade Level: 9

Content Areas: Reading
High Interest-
Low Vocabulary

Concepts:

1. Trees play an important role in the life of man, birds and animals.
2. Environmental conditions play an important role in the kind of trees.
3. Weather is an important factor in the life of a tree.
4. Through proper forestry practices adequate trees will be available for future generations.

Performance Objectives:

By the end of the study of "Trees", participating students will:

1. Apply tree identification skills from type of bark, leaves and wood as determined by their identification of a minimum of ten common trees as recorded by the teacher.
2. Acquire a knowledge of jobs related to forestry and wood products by listing at least ten such occupations on a teacher made test.
3. Comprehend at least ten uses of trees and wood products to serve personal needs by listing them in written form.
4. Respond with a minimum of 3.0 on a 5.0 rating scale.

Activities:

1. Show filmstrips.
2. Display charts from the following places:
   a. United States Forestry Service
   b. American Forest Institute
3. Secure books for reference reading.
4. Take a field trip to Daniel Boone Forest.
5. Take a field trip to area around Lake Linville and Salt Peter Cave.
6. Make a leaf notebook.
7. Make charts and posters showing the density of different type trees in our area.
8. Give written and oral reports concerning enemies of the trees.
9. Make prints of leaves.
10. Learn to measure the height of trees.
11. Learn to find the diameter and circumference of trees.

Discussion:

1. The importance of trees to our society.
2. The ways to protect our forest.
3. The jobs provided by trees and tree products.
4. The importance of trees to the animals and birds.
5. The beauty of trees to our environment.
6. The beauty along our highways.

Resources and Materials:

1. Filmstrips
2. Books
3. Notebook
4. Field guide to trees
5. Measuring tape
6. Compass
7. Plastic wrap
8. Pencils, paper, poster paper

Evaluation:

1. Students identify ten common trees by the following method:
   a. leaves
   b. bark
   c. wood
2. Children express how they will attempt to protect the future of the forest.
3. Students list ten occupations related to forests.
4. Brief teacher narrative evaluation.
5. Administer rating scale.

TREES

RESOURCES

Books:

Grimm, W., Familiar Trees of America, New York, Harper, 1967

Guilcher, J.M., A Tree Grows Up, New York, Sterling, 1973

Guilcher, J.M., A Tree is Born, New York, Sterling, 1973

Hutchins, R., This is a Tree, New York, Dodd, 1964

Kieran, J., Introduction to Trees, New York, Doubleday, 1966

Audiovisual:

Filmstrips:

1	How To Identify Common Trees	Listening Lib.
1	Trees	Cornet Films
1	Using Our Forest Wisely	EBE

Fimstrips/Cassette:

4 FS/CAS	The Role of Trees in the Environment	EUC

Filmstrip/REC:

1	Trees: An Ancient Kinship	Lyceum

Slides:

1	Trees	NAS

Study Prints:

1	Broad Leaf Trees	Group I	SVE

Resources - Additional

TREES

- Rating Scale -

Below are some statements about our study of trees. Please circle the number after each statement that best tells how you feel about what we did.

1 - Poor
2 - Fair
3 - Pretty good
4 - Very good
5 - Great

1. Looking at filmstrips. 1 2 3 4 5
2. Reading about trees and their uses. 1 2 3 4 5
3. Taking field trips. 1 2 3 4 5
4. Making notebooks. 1 2 3 4 5
5. Making charts and posters. 1 2 3 4 5
6. Making leaf prints. 1 2 3 4 5
7. Measuring trees. 1 2 3 4 5

BIRDS

Unit 11

Grade Level: 9

Content Area: Reading
High-Interest-
Low Vocabulary

Concepts:

1. Birds add beauty to our environment.
2. There are many species of birds.
3. There is a relationship between birds and the climatic conditions.

Performance Objectives:

1. Apply skills of bird identification by size, color and song as measured by their identification of at least 10 local birds as determined by teacher records on each child.
2. Comprehend under what conditions various birds may be harmful as determined by their written descriptions in bird notebooks.
3. Comprehend at least 10 environmental effects on bird life as demonstrated by listing and describing those effects in their bird notebooks.
4. Respond with a positive score of at least 3.5 on a 5.0 rating scale.

Activities:

1. Keep a bird notebook which gives a picture description and where they are found.
2. Take the students on a trip to Daniel Boone Forest.
3. Take a trip to Bernheim Forest, Clermont, Kentucky. No charge and open March 15th until November 15th from 9:00 until sundown.
4. Observe nests and the type each bird makes.
5. Make several kinds of bird houses.
6. Have a period of bird watching letting each student observe a bird and take notes during this interval.

Material and Resource:

1. Books
2. Filmstrips
3. Notebook
4. Binoculars
5. Field guide to birds
6. Pencil and paper

Discussion:

1. The beauty of birds to our environment by the teacher.
2. Permit students to give details of their hour of bird watching.

Evaluation:

1. Brief teacher narrative of unit effectiveness.
2. Display the bird houses and let the children give the reason why their house was the right one.
3. Evaluate student notebook.
4. Give a check-up to see how well the student can identify the different birds.
5. Administer rating scale.

BIRDS

RESOURCES

Books:

Adler, H., Bird Life, New York, Sterling, 1973

Audubon, J.J., Birds of America, New York, Sterling, 1972

Bechtel, J., Cage Luid Identifier, New York, Sterling, 1972

Bosiger, E., Bird is Born, New York, Sterling, 1972

Littlewood, C., World's Vanishing Birds, New York, Arco, 1970

Peterson, R., Field Guide to Birds, Boston, Houghton, 1947

Steffured, A., Birds in Our Lives, New York, Arco, 1970

Roots, C., Soft Billed Birds, New York, Arco, 1970

Filmstrips:

1 set of 6	Audubon's Birds of America John James Audubon - Artist and Naturalist Birds of the Countryside Birds of Forest and Woodland Birds of Villages and Towns Birds of the Gardens Birds of Sea and Shore	EBE
1	How To Recognize Birds	SVE
1	How Birds Fly	ESB
1	How Birds Are Fitted For Their Work	SVE
1	Birds Are Helpful And Harmful	Jam Handy
1	Birds by National Geographic	Nat. Geo
1 set of 5	Classification of Living Birds	EBE
1 set of 4	Birds You Should Know	NFB of C

Filmstrips/REC:

4 FS/Rec	Birds And Their Songs	Eyegate

Kits:

1	Birds In The Sky	Children's Press

BIRDS

Resources:(Continued)

Filmloop:

1	Birds Building Nests	ICF
Super 8	Flight of Birds	ESB
1	Birds Feeding Their Young	ICF

Slides:

1	Birds	NAS

Study Prints:

1	Familiar Birds And Their Young and Their Nest	SVE

Resources - Additional

BIRDS

- Rating Scale -

Below are some statements about our Bird Study. Please circle the number that best expresses how you feel about each statement.

1 - Poor
2 - Fair
3 - Good
4 - Very good
5 - Great

1. Keeping a bird notebook. 1 2 3 4 5
2. Field trips to study birds. 1 2 3 4 5
3. Making bird houses. 1 2 3 4 5
4. Learning how to identify birds. 1 2 3 4 5
5. Studying bird nests. 1 2 3 4 5

CATEGORIZATION OF PEOPLE

Unit 12

Grade Levels: 9-12

Content Area: Language Arts

Concepts:

1. People are categorized by their appearance, speech, and actions. They are placed into categories according to geograpical origin, social position, occupation, physical characteristics, economic situation and ability.

Performance Objectives:

By the end of the session on categorizing people participating students will demonstrate a value of human relations by:

1. Written responses on how this study has been helpful to each of them.

Activities:

1. Visit a place where students will see many people they don't know.
2. Make notes about persons - who, what they are.
3. Interview a student unknown to them or a teacher.
4. Show pictures of people that suggest character types; Negro, hippie, aged person, athlete.

Discussion:

1. How do you think others categorize you?
2. How is man's relationship to man affected by people being placed in categories?
3. Are people prevented from having a chance because of others' misjudgement of them?
4. How does geographical location affect peoples' appearance, actions, and speech?
5. What human characteristics seem desirable? Why?
6. If you could be different, what would you change about yourself? Why?
7. How do you choose your friends?
8. On what will you base your choice of a marriage partner?
9. How does heredity effect our behavior?
10. How does environment affect and influence our behavior?
11. What problems could be solved by an improvement of human relationships?

Evaluation Procedures:

1. Students will write brief responses about how their thinking has been changed about judging people before really knowing them.
2. Teacher will write a brief narrative recording student's reactions and apparent progress in changing thought patterns.

CATEGORIZATION OF PEOPLE

RESOURCES

Books:

Bareich, D., Glass House of Prejudice, New York, Morrow, 1946

Edel, M., Story of People, Boston, Little, 1953

Franklin, J., Color And Race, Boston, Houghton, 1968

Glock, C., Prejudice U.S.A., New York, Praegu, 1969

Kirstein, G., The Rich, Boston, Houghton, 1968

Mayerson, C., Two Blocks Apart, New York, Holt, 1965

Mead, M., Rap on Race, Philadelphia, Lippincott, 1971

Mead, M., Science and the Concept of Race, New York, Columbia Press, 1968

Montagie, A., A Man's Most Dangerous Myth, New York, World, 1964

Packard, V., Status Seekers, New York, McKay, 1959

Scientific American Inc., Human Variation and Orgins, San Francisco, Freeman, 1967

Filmstrips:	Separate But Equal	EBE
	We Are All Brothers	Public Aff.
Filmstrips/Cassette:	American Children	Jam Handy
	Portrait of a Minority	Scott Ed.
Filmstrips/Record:	Understanding Prejudice	Sunburst
	Why The Skin Has So Many Colors	Sunburst
Transparancies:	World Races	Denoyer-Geppert

COMMUNICATION THRU BALLADS

Unit 13

Grade Levels:

Content Area: Language Arts

Concepts:

1. The ballad is a visable form of communication.

Performance Objectives:

By the end of the sessions on ballads participating students will:

1. Comprehend the concept that ballads have a message by writing in their own words their interpretation of two ballads.
2. Apply skills of ballad writing by developing a four stanza ballad of area events in proper form as determined by the teacher.
3. Respond favorably to activities of ballad study by scoring a minimum of 3.0 on a 5.0 attitude scale.

Activities: Exploration

1. Show filmstrip on origin of ballad and ballad form.
2. Play record of "Appalachian Folk Songs" by the Berea College Choir.
3. Reading of ballads.

Discussion:

1. What types of people are the incidents concerned with?
2. What are the usual themes? (Physical courage and love)
3. Does the supernatural play an important role in the ballad?
4. Is the ballad concerned with several incidents or does the action center on just one incident?
5. How is action developed? (Through dialogue)
6. How was the ballad been passed to us?
7. How did the ballad originate? Why?
8. Discuss the ballad form:
    a. Four line, rhyming a b c d
    b. First and third lines have four accented syllables.
    c. Second and fourth lines have three syllables.
    d. Sometimes has a refrain.

Applications:

1. Bring in examples of ballads sung in this area.
2. Compose a ballad of at least four stanzas which relates some event, past or present, involving some incident of the area.
3. Those who are able may want to write music for their ballad.
4. Share ballads with class; these may be mimeographed and made into a pamphlet for each student.

Resource Materials:

1. Filmstrip
2. Record - "Appalachian Folk Songs"

3. Book - "Singing Family of the Cumberlands"

Evaluation Procedures:

1. Administer attitude scale.
2. Collecting students' written ballads.
3. Brief teacher narrative evaluation.

COMMUNICATIONS THRU BALLADS

RESOURCES

Books:

Ashton, J., Century of Ballads, Detroit, Singing Tree Press, 1968

Ashton, J., Modern Street Ballads, Detroit, Singing Tree Press, 1968

Browne, C., Story of Our National Ballads, New York, Crowell, 1960

Lomax, J., American Ballads and Folk Songs, New York, Macmillian, 1934

Myrus, D., Ballads, Blues and the Big Beat, New York, Macmillin, 1966

Ritson, Ancient Songs and Ballads, Detroit, M., Singing Tree Press, 1969

Scott, J., Ballad of America, New York, Grossett, 1966

Filmstrips/Records:

12 FS/REC	Our Heritage of American Folk Music Group I Songs of the Sea Songs of the Cowboy Songs of the Mountains Songs of the Railroad Songs of the Plains Songs of the Civil War Group II Songs of the American Revolution Songs of the Old South Songs of Pioneer Mid-America Songs of the Western Frontier Songs of the Mississippi Valley Songs of the Old Southwest	SVE

Records:

2 - REC	Ballads of the Revolution	Folkway
"	Ballads of the War	"
"	Ballads of the Civil War	"

(Resources - Additional)

COMMUNICATION THRU BALLADS

- Rating Scale -

Below are activities you participated in during our study of ballads. Please circle the number that best expresses how you felt about these activities. The numbers represent the following feelings:

1 - Disliked
2 - Poor
3 - Fair
4 - Good
5 - Excellent

1. Viewing filmstrips	1	2	3	4	5
2. Listening to Appalachian folk songs	1	2	3	4	5
3. Reading of ballads	1	2	3	4	5
4. Writing of ballads	1	2	3	4	5
5. Interpreting the meaning of ballads	1	2	3	4	5

MEASUREMENT

Unit 14

Grade Levels: 9-12

Content Area: Math

Concepts:

1. Very few people can actually realize the size of an acre or a mile.
2. Measurement gives dimension to the abstract.
3. The U.S. is rapidly changing to the metric system.
4. The metric system is the universal system of measure.
5. Destruction of an acre of woodland will cause erosion and loss of valuable water shed.

Performance Objectives:

By the end of the study on Measurement,participating students will:

1. Apply measurement and problem solving skills using the English and metric system by scoring a minimum of 75% on a teacher made test.
2. Respond favorably with a minimum score of 3.0 on a 5.0 checklist.

Activities:

1. We will first measure the area of the classroom in square feet, square inches, and square yards.
2. Go outside, measure the perimeters of the school building and calculate area thereof.
3. Expand our measure to include a rod and finallyan acre.
4. Have four students stand on four corners of the "acre" and let all students walk around it,thus they can even measure in paces.
5. Show the difference between the metric system and English system.
6. Repeat 1-4 using metric units.
7. Go outside, measure a kilometer and mile, compare distances.
8. Assign problems using metric as well as English units.
9. Have students measure their own rooms, homes, and yards, and find the areas.
10. Discuss what a water shed is and how it is important to us and future generations.
11. Let them see how the angle of elevation would affect the volume of water shed.
12. Show them how to measure the angle of elevation.
13. Note different examples of erosion due to destruction of watershed.
14. Students bring examples of metric measures used on products in their homes. Example: medicines, foods, household products, chemicals, etc.
15. Compare systems of weights and volumes as an extra activity.

Discussion:

1. How are different measures realatéd?
2. How do the metric and English systems of measures differ?
3. Is it easier to measure with the metric or English system?
4. Do you think you honestly could measure an acre? A mile?

5. Why is water important?
6. What is a water shed?
7. What causes erosion?
8. Is erosion and loss of natural water shed going to effect you in any way? How?
9. How does the angle of elevation affect the amount of water running into reservoirs, springs, rivers, etc.?
10. How do you think the U.S. is changing to the metric system?

Evaluation Procedures:

1. Teacher made test.
2. Activity checklist.
3. Brief written narrative.

Resources:

1. Meter sticks.
2. Gram, kilogram, milligram weights.
3. Leter, millileter, liquid measures.
4. Ounce and pound weights.
5. Yardsticks.
6. Quart and pint cups.

MEASUREMENT

RESOURCES

Books:

Greenhood, D., Mapping, Chicago, University of Chicago Press, 1964

Smith, G.H., Conservation of Natural Resources, Somerset, New Jersey, Wiley, 1965

Wheeler, F., Size of Things, New York, Coward, 1968

Filmstrips: (35mm)

1 set of 10	Maps and How to Use Them	Eyegate
1	Measurements	McGraw

Filmstrips/REC:

6 FS/REC	Working With Maps	Eyegate

Transparencies:

4	Measurement Liquid Measurement Linear Measurement Weights Dry Measure	Instructo Corp.

MEASUREMENT

- Rating Scale -

Below are statements about our study of measurement. Please circle the number that best expresses your feelings.

1 - Poor
2 - Fair
3 - Good
4 - Very good
5 - Great

1. Measuring classroom and school building area. 1 2 3 4 5
2. Measuring an acre. 1 2 3 4 5
3. Measuring with the metric system. 1 2 3 4 5
4. Measuring with the English system. 1 2 3 4 5
5. Measuring elevation of a watershed. 1 2 3 4 5
6. Class discussion. 1 2 3 4 5
7. Measuring at home. 1 2 3 4 5
8. Studying erosion problems. 1 2 3 4 5
9. The outdoor activities. 1 2 3 4 5

COST, SUPPLY AND DEMAND

Unit 15

Grade Levels: 9-12

Content Area: Math

Concepts:

1. Supply, demand, and availability of our natural resources affects their value.
2. Conservation of and our wise use of our wooded areas will insure their presence in the future.

Performance Objectives:

1. By the end of the session, 75% of the participating students will apply skills of calculating cost of materials for building construction by designing and planning a home including materials cost.
2. At the conclusion of the session, participating students will apply problem- solving skills by scoring 75% on a teacher made test.
3. By the end of these sessions, participating students will respond positively to "Cost, Supply & Demand" activities by scoring a minimum of 3.0 on a 5.0 attitude scale.

Activities:

1. Take students to lumber mill and if possible to a wooded area, where they will observe all phases of lumber manufacturing in this area.
2. Let them see why the abundance of different trees affects the prices of the different woods.
3. Let them see that quality of the woods affects their price.
4. Take students out to a tree and let them calculate the number of board feet in a live tree. Could estimate height, circumference, and age.
5. Students should learn to be selective in their use of the timber resource and it should be pointed out through discussion that the forest is a fast-diminishing natural resource for fighting pollution, for beauty, for providing food and shelter for our wild animals.
6. Show filmstrips from Forest Service.
7. A resource person will be brought to class and there they will be asked to figure the materials that will be needed for a given size house. Calculate amounts and costs of lumber, wiring, plumbing, insulation, etc.
8. Begin discussion of financing for home building or other necessities.

Discussion:

1. What can we do to conserve our natural resources?
2. How does the availability of the wood effect its price?
3. Can the same kind of wood have different prices? What affects this?
4. What are the waste products of lumbering used for? Is any of it wasted?

Resources:

1. Filmstrips from Forest Service (several should be available)
2. Pencils
3. Paper

4. Resource person
5. Bus for trip and permission slips from parents

Evaluation Procedures:

1. Teacher made skills test.
2. Maintain copy of students home plan.
3. Administer and retain attitude scale.
4. Teacher write a brief narrative evaluation.

COST, SUPPLY AND DEMAND

RESOURCES

Books:

Bruere, M., Your Forest, Philadephia, Lippincott, 1957

Everett, T., Living Trees of the World, Garden City, N.J., Doubleday, 1968

Filmstrips:

1 set of 3	Using Natural Resources	EBE
1	Using Our Forest Wisely	EBE
1	Identifying Common Trees	SVE

Filmstrips/Cassette:

1 set of 4	The Role of Trees in the Environment	EUC

Filmstrips/Records:

1 FS/REC	Preserve and Protect	NYT

Study Prints:

1	Broad Leaf Trees (Group I)	SVE

Resources - Additional

COST, SUPPLY, DEMAND

- Rating Scale -

Below are activities we carried out in our study of cost, supply and demand. Please express how well you liked them by circling 1 to 5. Do not sign your name. The numbers are:

1 - Hated it
2 - Not so good
3 - Okay
4 - Good
5 - Great

1. Visit to the lumber mill.	1 2 3 4 5
2. Measuring trees.	1 2 3 4 5
3. Viewing filmstrips.	1 2 3 4 5
4. The class visitor's program on material costs.	1 2 3 4 5
5. Our discussion on forest conservation.	1 2 3 4 5

SELF DISCOVERY ACTIVITY - INVESTIGATING PROPERTIES OF ACIDS AND BASES

Unit 16

Grade Levels: 9-10

Content Area: Science
Language Arts

Concepts:

1. Understanding the acidity and alkalinity of various household products helps in making wise purchases.
2. Use of strong acids and alkaline substances may be disastrous.
3. Strongs acids and alkalines have many valuable uses.
4. Research is a systematic procedure of finding accurate information.

Performance Objectives:

1. At the conclusion of this Self-Discovery Activity, participating students will:
   a. Comprehend what causes a substance to be acidic or alkaline.
   b. Comprehend the proper handling procedures for acidic and alkaline substances.
   c. Apply procedures in the testing of a substance for its acidic and alkaline properties.
   d. Apply the nautralization process of acids and bases through titration.

Activities:

1. Observe T.V. and radio commercials. Identify household cleansers (drain cleanser, detergents, soap, etc.)
2. Note specific claims of the product, i.e. bleaching mild on hands.
3. Make a list of these items you are using at home.
4. Discount of false claims, i.e. difference in propaganda and facts.
5. Bring samples of products for class that students have at home (label-brand name and type product.)
6. Test products for acidity and alkalinity. (Have students do research on procedures for running tests. Have group to organize and consult with instructor before actually running any tests.)
7. Have students bring samples of water from several different sources in their area and test PH.
8. Determine PH of an unknown acid or base by titration method.
9. Keep accurate data of experiments.
10. Debate and/or panel discussion - simulated advertising determine factual or propagandizing.

Discussion:

1. What causes substances to be acids or bases?
2. How do we neutralize acids and bases?
3. What differences were noted in PH of water from various areas of the county?
4. What material might have caused specific PH's?

5. What ways could home products be harmful if used improperly?
6. What would be some safety measures to apply if your skin or clothes were to come in contact with strong acids?

Evaluation Procedures:

1. Administer attitude checklist.
2. Collect students' experiment records.
3. A brief teacher narrative evaluation.

Resources and Materials:

1. Litmus paper
2. Pamphlets on water pollution
3. Phenolphthalein
4. Titration apparatus
5. Science textbook with excellent unit concerning acidic and alkaline properties and information necessary for performing tests.
6. Beakers
7. Stirring rods

Self Discovery Activity - Investigating Properties of Acids and Bases

RESOURCES

Books:

Chennault, A., Chemistry: An Investigative Approach, Boston, Houghton, 1968

Parsons, C., Chemists At Work, Waltham, Mass., Ginn, 1966

Filmstrips:

1 set of 30 Experiments in Chemistry (series) EBE

Introduction to the Chemistry Laboratory - Part I
Introduction to the Chemistry Laboratory- Part II
Measurement in Chemistry
Experiments With Subatomic Particles
The Size of Molecules
Crystallization
Chemical Reactions
Energy of Reactions
Boyle's Law
Charles' Law
Molar Volume of Gas
Determination of a Formula
Ionization
Acids and Bases
PH
Hydrolysis
Equivalent Weight
Titration
Reaction Rates
Equilibrium
Oxidation - Reduction Reactions
Oxidation - Reduction Titration
Electrochemistry
Chemistry of Columns I and II
Chemistry of the Halogens
Chemistry of Sulfur
Chemistry of Boron and Aluminum
Chemistry of Iron
Qualitative Analyses

Resources - Additional

Self Discovery Activity - Investigating Properties of Acids And Bases

- Checklist -

Below are statements concerning our study of properties of acids and bases. Please circle the number that best expresses how you feel. Do not sign your name. The numbers are as follows:

1 - Hated it
2 - Not so hot
3 - Okay
4 - Good
5 - Great

Please indicate what you liked best.

1. Listening to T.V. commercials claims. 1 2 3 4 5
2. Determining propaganda and fact. 1 2 3 4 5
3. Collecting and testing H_2O samples. 1 2 3 4 5
4. Researching testing procedures. 1 2 3 4 5
5. Running titration tests. 1 2 3 4 5

YOU CAN'T PLANT CORN IN CONCRETE

Unit 17

Grade Level: 9

Content Area: Science

Concepts:

1. Man is abusing the land by the ways in which he is building roads, factories, and homes.
2. Damage to land by abuse can be reduced or stopped.
3. Building of dams is not always the answer to wise use of the land.
4. Man is dependent on the land and forests.

Performance Objectives:

At the conclusion of the unit, "You Can't Plant Corn in Concrete", the student will:

1. The student will comprehend the many ways in which man is abusing the land as measured by written description of abusive practices.
2. The student will respond favorably to this study by scoring a minimum of 3.0 on a 5.0 attitude scale.

Activities:

1. Survey the land within sight of the school building to determine the amount of land used for buildings, roads, dams and forests.
2. Interview a representative of the Army Corps of Engineers as to:
   a. What is the Corps? Its function? Steps involved in public works projects? Cost - Benefit Ratios, how the Corps attempts to protect the environment, waterways. What is the future of the Corps and public works project?
3. See filmstrips on land and forest conservation.
4. Interview a highway engineer as to why roads are placed where they are. Cost of road construction in flat land as compared to hilly land.
5. Interview with forest ranger to find out:
   a. What is being done to protect our forest.
   b. How they choose land to be set aside as national forest land.
   c. How they harvest lumber from national forests.
6. Field trip to Lake Linville to see how dams are constructed and how they are used.
7. Visit a farm to see how soil conservation is carried out in our local area.
8. Use the land around his home as a laboratory to apply the concept of wise use of the land.

Discussion:

1. Is man making wise use of the land?
2. What are some of the important factors to consider when we are building roads, dams, homes, and other types of buildings?
3. What are the determining factors as to which land will be set apart for national forests?
4. Where can we find information on how to use our land and forest so that future generations will also benefit?

Resource Materials:

1. Representatives from Army Corps of Engineers, National Forest Service, Highway Department of Engineers, County Agricultural Agent.
2. Materials that are published by each of the departments listed above.
3. Filmstrips on "Wise Use of Our National Resources"
    a. Land
    b. Forest
    c. Water

Evaluation Procedures:

1. Pre and post check by the teacher of land on which the student will conduct his laboratory project on wise use of land.
2. Students written statements of land abuse.
3. Teachers brief narrative evaluation

YOU CAN'T PLANT CORN IN CONCRETE

RESOURCES

Books:

Briggs, P., Water: The Vital Essence, New York, Harper, 1967

Cook, J., World of Water, New York, Dial Press, 1957

Everett, T., Living Trees of the World, Garden City, New Jersey, Doubleday, 1968

Guilcher, J.M., A Tree is Born, New York, Sterling, 1972

Hutchins, R.E., This is a Tree, New York, Dodd, 1964

Kellogg, C., Soil That Supports Us, New York, Macmillian, 1941

Kieran, J., Introduction to Trees, Garden City, New York, Doubleday, 1966

McCormick, J., Life in the Forest, New York, McGraw, 1966

Moss, F., Water Crisis, New York, Praeger, 1967

Platt, R., Great American Forest, Englewood Cliff, New Jersey, Prentice, 1965

Silverburg, R., World of the Rain Forest, Des Moines, Iowa, Meredith, 1967

Filmstrips:	1 set of 4 (series)	Conservation is Everybody's Business Saving the Soil People, Our Most Valuable Resource Using Our Forests Wisely Nothing Can Live Without Water	McGraw
	1 set of 6 (series)	Ecological Imbalance Upland Forest - Despoliation and Imbalance Lowland Forest - Despoliation and Imbalance Marshes - Despoliation and Imbalance Grasslands - Despoliation and Imbalance Streams and Ponds - Despoliation and Imbalance Sea Shore - Despoliation and Imbalance	Eyegate
	1	Squandered Resources	New York Times
	1	Using Natural Resources	Ward
	1	What's Happening to Our National Resources	NYT

Filmstrips/Cassettes:

1 set of 4	Ecological System Group I Ecology of a Seashore Ecology of a Forest Ecology of a Pond Ecology of a Desert	(series)

Resouces: (Continued)

Filmstrips/Records:

3 FS/REC	Our Land - Uses and Values		SP
6 FS/REC	Saving What's Left	(series)	Eyegate
	When Grass Was Green and the Water Blue		
	Ill Fares the Land		
	Utilizing Our Resources		
	Our Human Resources		
	Adding to Our Resources		
	What is Conservation		

YOU CAN'T PLANT CORN IN CONCRETE

- Checklist -

Below are activities you participated in during our study of land abuse. Circle the number that best expresses your feeling about each activity.

The representative numbers are:

1 - Disliked
2 - Poor
3 - Fair
4 - Good
5 - Excellent

1. Surveying land around school. 1 2 3 4 5
2. Interviews with visitors to the school. 1 2 3 4 5
3. Field trips. 1 2 3 4 5
4. Home projects. 1 2 3 4 5
5. Filmstrips. 1 2 3 4 5
6. Writing descriptions of land abuse. 1 2 3 4 5

DETECTING GEOLOGIC HISTORY THROUGH FOSSILS

Unit 18

Grade Levels: 9-10

Content Area: Science

Concepts:

1. We can know what conditions on earth were like a million years ago from the study of fossils.
2. We can learn much about the environment by studying the kinds of life (plants and animals) as evidenced by fossils.
3. Studying fossils reveals the secrets of the past.

Performance Objectives:

At the conclusion of this study of fossils the participating students will:

1. Be able to comprehend and identify a variety of types of fossil preservations to include:
   a. Complete remains
   b. Unaltered hard parts
   c. Petrified remains
   d. Molds and casts
   e. Carbon residues
   f. Tracks, trails, and burrows
   g. Indirect evidences
2. Be able to apply skills necessary to make inferences and formulate hypotheses based on data presented in fossils as determined by their recorded data.
3. Respond favorable to the study of fossils by scoring a minimum of 3.0 on a 5.0 attitude scale.

Activities:

1. Collect fossils that include both animals and plants that lived years ago. (Complete remains)
2. Collect teeth, bone, shell and wood materials (unaltered hard parts).
3. Collect original material replaced by mineral matter, with preservation of the internal textural detail. (petrified materials)
4. Make molds and cast of the collected materials.
5. Identify tracks, trails and burrows without any actual remains of the organism.
6. Collect indirect evidences of animals such as stomach stones (gastroliths) and excrement (corpolites) preserved by petrification that gives clues to the animals.
7. Make field trips to collect materials.
8. See filmstrip on fossils.
9. Use library to do research on what is already known about animals and plants that are found in fossils.

Discussion:

1. How can we know that conditions on earth have changed over the years?
2. How are fossils found?
3. What are some ways in which fossils are used to study the past?

4. How can we make inferences and formulate hypotheses based upon study of fossils.

Resource Materials:

1. Materials collected in our area.
2. Books on fossils
3. Footprint diagrams.
4. Graph paper
5. Measuring ruler
6. Small glass plates
7. Liquid rubber
8. Plaster of Paris
9. Paper plates
10. Vaseline
11. Food coloring
12. Small brush

Evaluation Procedures:

1. Teacher brief narrative evaluation.
2. Retain some of the materials collected.
3. Student casts and molds.
4. Student recorded data on inferences hypotheses.
5. Administer attitude scale.

DETECTING GEOLOGIC HISTORY THROUGH FOSSILS

RESOURCES

Books:

Fenton, C., *Fossils*, Garden City, New York, Doubleday, 1958

Fenton, C., *Life Long Ago*, New York, John Day, 1937

Fenton, C., *Tales Told by Fossils*, Garden City, New York, Doubleday, 1966

Moore, R., *Man, Time, and Fossils,* New York, Knopf, 1961

Murray, M., *Hunting for Fossils*, New York, MacMillian, 1967

Filmstrips	*How Fossils are Formed*	EBE
	Collecting and Interpreting Fossils	EBE
Set of 5	*Fossils and the Relative Ages of Rocks*	EBE
	Fossils and Prehistoric Environments	EBE
	Fossils and Organic Change	EBE
	Fossils: What They Are	Budek

Resources - Additional

DETECTING GEOLOGIC HISTORY THROUGH FOSSILS

- Rating Scale -

Below are activities you participated in during our study of fossils. Circle the number that best expresses your feelings about each activity. The numbers are as follows:

1 - Disliked
2 - Poor
3 - Fair
4 - Good
5 - Great

1. Making fossil collections. 1 2 3 4 5
2. Filmstrips 1 2 3 4 5
3. Making casts and molds. 1 2 3 4 5
4. Writing inferences and hypothses. 1 2 3 4 5
5. Identifying tracks, trails, and burrows. 1 2 3 4 5
6. Field trips. 1 2 3 4 5

HOW MAN AFFECTS THE EARTH'S WATER

Unit 19

Grade Levels: 9-10

Content Area: Science
Biology

Concepts:

1. Man affects water in both harmful and helpful ways.
2. An adequate supply of usable water for future generations may become limited.
3. Excessive water pollution can be harmful to all living organisms.

Performance Objectives:

After completing this activity the students will:

1. Comprehend the dangers they are subjected from using unsafe water as evidenced by a narrative report.
2. Apply means through actual application of model sewage plants or water treatment plants.
3. Comprehend and apply the techniques for measuring water turbidity and what t degree of turbidity (cloudiness) indicates, as indicated by students records of experiments and data kept.
4. Will respond with a minimum score of 3.5 on a 5.0 point attitude scale and written comments.

Activities:

1. Show filmstrips or movies on sources of water pollution.
2. Have students do research concerning different types of water purification.
3. Visit sewage treatment plants.
4. Students construct model sewage plant or water treatment plants.
5. Student research on different tests for determining the degree of water pollution.
6. Students bring samples of drinking water to class and test for pollutants.
   a. Test for solid waste.
   b. Bacterial contamination.
   c. Chemical contamination.
   d. Odor
   e. Taste
   f. Color
7. Develop an instrument to use in judging water pollution by measuring its turbidity (if photometer is not available). Reference: "Anti-Pollution Lab", page 70.
8. Suspicious samples of water (excessive signs of bacterial growth from culture or chemical pollutants) can be further tested by Health Department technician.
9. Students try to find and bring to class lists of water pollution sources and suggest ways to help reduce or eliminate this pollution in their community.

Discussion:

1. What causes some drinking water to have different characteristics? (i.e. taste, odor, color)

2. What are the sources of bacterial contamination that you have found in your study?
3. Discuss the operation of water treatment plants.
4. Discuss ways nature purifies water (i.e. filtration, sedimentation.)

Evaluation Procedures:

1. Administer attitude checklist.
2. Collect and check data kept by the students.
3. Check the model water treatment plants assembled by students.
4. Brief narrative evaluation.

Materials:

1. Filmstrip and projector
2. Research material
3. Jars for collecting water
4. Filter paper
5. Microscopes
6. Anti-Pollution Lab, Blanstein, E.H., Sentinal Books Publisher Inc., New York, 1972

HOW MAN AFFECTS THE EARTH'S WATER

RESOURCES

Books:

Briggs, P., Water: The Vital Essence, New York, Harper, 1967

Cunningham, F., 1001 Questions About Water Resources, New York, Dodd, 1967

Leopard, L., Water, New York: Time-Life, 1966

Moss, F., Water Crisis, New York, Praeger, 1967

Filmloop:	1	Water	Hester
Filmstrips:	1 set of 6	Our Changing Earth	SVE
	1	Water Cycle	Budek
Filmstrips/Cassette:	1 set of 4	Young Scientists Investigate Pollution	SVE
Filmstrips/Records	1 set of 4	Ecology - Land and Water	Eyegate
	1 set of 2	Water Pollution	SP
Kits:	1	Water Pollution	Tecnifax

Resources - Additional

HOW MAN AFFECTS THE EARTH'S WATER

Checklist

Below are statements concerning our study and work on the subject of water pollution. Please respond by circling the number that best describes the way you feel about this study and application activity.

1 - Strongly disliked
2 - Disliked
3 - Okay
4 - Good
5 - Great

1. Visit sewage treatment plant. 1 2 3 4 5
2. Determining the degree of water pollution. 1 2 3 4 5
3. Testing water for pollutants. 1 2 3 4 5
4. Research on water purification. 1 2 3 4 5
5. Listing types of water pollution noticed in your community. 1 2 3 4 5
6. Constructing a model treatment plant. 1 2 3 4 5

WEATHER PREDICTION

Unit 20

Grade Levels: 9-10

Content Area: Science

Concepts:

1. Weather plays an important role in the life of man.
2. Physical factors cause weather and weather changes.
3. Weather stations play an important role in weather prediction.
4. There are relationships between cloud types and weather.
5. With the proper knowledge and instruments you can predict the weather.

Performance Objectives:

At the conclusion of the activities of "Weather Prediction", the participating students will:

1. Comprehend the role of weather in the life of man.
2. Comprehend causes of weather conditions.
3. Apply skills to build a weather station.
4. Apply skills to weather prediction.
5. Comprehend types of cloud formation.

as measured by:

Each student maintaining a record of activities to be turned in to teacher.

6. Respond with a positive score of 3.5 on a 5.0 point attitude scale.

Activities:

1. Study the earth's atmosphere in terms of heat, pressure, moisture, wind, and kinds of clouds.
2. Build a weather station to include a barometer, hygrometer, high-low thermometer, weather vane and rain guage.
3. Keep a daily weather chart.
4. Trip to a weather station.
5. Use of person in county (local weatherman).

Discussion:

1. How is weather affected by heat, pressure, moisture, wind and kinds of clouds?
2. What is a barometer and how is it used?
3. How can we build a therometer?
4. How can a hygrometer, high-low thermometer, weather vane, and rain guage be constructed and used in weather prediction?
5. How are weather charts useful to man?
6. What are some types of clouds and howare they related to weather prediction?
7. How has man and his activities affected the weather?
8. How does weather effect the economy in our local area?

Resources and Materials:

1. Weather maps (newspapers, radio, T.V. weather predictions
2. Barometer

3. Hygrometer
4. High-low thermometer
5. Weather vane
6. Rain guage
7. Relative humidity scale and wind estimation scale
8. Local weatherman
9. Overlays of kinds of clouds

Evaluation Procedures:

1. Collect student activities record.
2. Administer attitude checklist.
3. Teacher will write a brief narrative evaluation.

Type of Weather Chart for Activity #3

Month ______________________________ Place ______________________________

	Barometer					Relative Humidity	Temperature		
Date	Time	Read.	Trend	Dry	Wet	%	High	Low	Pressure

Rainfall	Wind		Clouds		Observations or Forecast
	Direction	Velocity	%	Type	

WEATHER PREDICTION

RESOURCES

Books:

Atkinson, B., Weather Business, Garden City, New York, Doubleday, 1969

Halacy, D.S., Weather Changes, New York, Harper, 1968

Holmes, C.D., Weather Made Clear, New York, Sterling, 1972

Kimble, G., Our American Weather, New York, McGraw, 1955

Laid, C., Weathercasting, Englewood Cliffs, New Jersey, Prentice, 1955

Flohn, H.,Climate and Weather, New York, McGraw, 1969

Schneider, H., Everyday Weather and How It Works, New York, McGraw, 1961

Watts, A., Instant Weather Forcasting, New York, Dodd, 1968

Filmstrip/Cassette:

1 set of 5	Power of Nature (series) Weather and Man Floods Earthquakes Volcanoes Forest Fires	National Geo.
1 set of 6	Understanding Weather And Climate (series) Air Masses and Weather Fronts Winds Around the World Humidity and How it Affects Us How to Forecast the Weather Moisture and Precipitation in the Air Weather Changes and Their Causes	SVE

Transparencies:

1 set of 9	Meteorology	SVE
1 set of 6	Weather	Hubbard
1 set of 14	Weather	Instructo

Resources - Additional

WEATHER PREDICTION

- Checklist -

Below are activities you participated in during our weather study. Please circle the number that best tells how you feel about each one. The numbers 1 through 5 are as follows:

1 - Hated it
2 - Not so good
3 - Fair
4 - Good
5 - Great

1. Study of the earth's atomosphere. 1 2 3 4 5

2. Building a weather station. 1 2 3 4 5

3. Keeping daily weather charts. 1 2 3 4 5

4. Trip to the weather station. 1 2 3 4 5

DETECTING, IDENTIFYING AND MEASURING AIR POLLUTANTS Unit 21

Grade Levels: 11-12 Content Area: Science

Concepts:

1. Air pollution has become a serious problem in our country.
2. Chemical analysis is an accurate method of testing the pollutions.
3. There are ways to measure the amounts of materials that pollute the air.

Performance Objectives:

At the conclusion of this study on air pollution, the students will:

1. Apply the following skills acceptable to the teacher as determined by their ability to detect, identify and measure air pollutions to within 3% error.
    a. Sulfur dioxide content in the air.
    b. Solid monoxide content of the air.
    c. Solid pollutants in air.
    d. Carbon dioxide.
2. Respond favorable to conducting air pollutants test by writting a brief narrative describing their feeling toward performing the activities.

Activities:

1. Teacher should burn some sulfur in classroom with exhaust fan off so students will become aware of sulfur dioxide present in the air.
2. The students will look through magazines in the library for places where air pollutants occur.
3. Use project 2-1 from the book, "Anti-Pollution Lab" by Elliott H. Blaustein to identify sulfur dioxide.
4. Use project2-2 from the book, "Anti-Pollution Lab" by Elliott H. Blaustein to measure the amount ofsulfur dioxide in the air.
5. Use white paper test to identify solid pollutants in the air.
6. Use project 2-3 from the book, "Anti-Pollution Lab", by E.H. Blaustein to measure solid pollutants in the air.
7. Detect and measure the amount of carbon dioxide in the air.
8. Detect, identify and measure the amount of carbon monoxide in the air. Project 2-8 in the book, "Anti-Pollution Lab" by E.H. Blaustein.
9. Have students develop a list of possible solutions to air pollution problems (consensus).

Discussion:

1. What are some of the effects of SO_2 in the air?
2. Why do we need to measure the amounts of pollutants in the air?
3. If we don't stop polluting the air, what then?
4. What are some of the results of air pollution?
5. What are some approaches to reducing air pollution?

Resource Materials:

1. The book, "Anti-Pollution Lab" by E.H. Blaustein, published by Sentinel Books Publishers, Inc., New York, 10010, 1972

2. Chemicals and glassware found in most high school chemistry labortories.
3. Filmstrip on air pollution.

Evaluation Procedures:

1. Individuals checked on meeting criteria specified in objective #1.
2. Retain student comments.
3. Teacher will write a brief narrative evaluation.
4. Retain students' composite list of possible solutions to air pollution.

DETECTING, IDENTIFYING AND MEASURING AIR POLLUTANTS

RESOURCES

Books:

Aylesworth, T.G., This Vital Air, The Vital Water, Chicago, Rand, 1968

Goldman, M., Controlling Pollution, Englewood Cliffs, New Jersey, Prentice, 1967

Kavalu, L., Dangerous Air, New York, John Day, 1967

Lewis, H.R., With Every Breath You Take, New York, Crown, 1965

Filmstrips:

1 ...	Air Pollution and You	CAF

Filmstrips/Cassette:

1 set of 2	Air Pollution	SP
1 set of 6	The Pollutants	AIDS

Filmstrips/Records:

1 FS/REC	Water and Air	NYT
4 FS/REC	Young Scientist Investigate Pollution	SVE

Transparencies:

1 set of 6	Conservation	SVE

HOW MAN AFFECTS THE EARTH'S LAND

Unit 22

Grade Level: 9-10

Content Area: Science
Biology

Concepts:

1. Mans influence on land is both helpful and harmful.
2. Excessive land pollution is harmful to many natural resources.
2. Man can reduce and help eliminate much excessive pollution.

Performance Objectives:

After completing this activity participating students will:

1. Comprehend that every household produces solid waste. (This is done by keeping an accurate record of the solid trash thrown away by his family during one week.)
2. Comprehend that trash is disposed of by dumping on land.
3. Comprehend that many waste products can be recycled.
4. Will respond with a minimum score of 3.5 on a 5.0 attitude scale and written comment.

Activities:

1. Have students bring pictures to class that show the eyesoreness of land pollution.
2. Go on field trips to trash dumps (which are usually smelly eyesores and rat-infested areas.)
3. Observe trash being disposed of by incineration (which adds to the problem of air pollution.)
4. Have students keep an accurate record of solid trash their family throws out for one week. Multiply this by the number of families living on their block or in their community. How big a pile does this trash make in one week; in one year?
5. Show movies or filmstrips about land pollution.
6. Students collect recyclable materials and give to organizations.
7. Students make lists of ways land pollution in their community can be helpful.

Discussion:

1. Discuss ways trash is disposed of.
2. What action produces most of the breakdown in materials buried in a landfill?
3. What are some of the harmful products in open burning of trash?
4. What are advantages or disadvantages of landfill areas?
5. Discuss ways recycling materials will help save natural resources and help keep America beautiful.

Evaluation:

1. Administer attitude checklist.
2. Collect and check data kept by students.
3. Brief narrative evaluation.

Materials:

1. Projects, films and/or filmstrips.

HOW MAN AFFECTS THE EARTH'S LAND

RESOURCES

Books:

Aylesworth, T.G., This Vital Air, The Vital, Chicago, Rand, 1968

Goldman, M., Controlling Pollution, Englewood Cliffs, Prentice, 1967

Filmstrip:

1 set of 9	Conservation of Our Resources	Eyegate
1 set of 7	Conserving Our Natural Resources	EBE
1	Squandered Resources	NYT
1	Saving Our Soil	McGraw

Filmstrip/Rec:

4 FS/REC	Young Scientists Investigate Pollution	SVE

Resources - Additional

HOW MAN AFFECTS THE EARTH'S LAND

- Rating Scale -

Below are statements concerning our study and work on the subject of land pollution. Please respond by circling the number that best describes the way you feel about this study and application activity.

1 - Strongly disliked
2 - Disliked
3 - Okay
4 - Good
5 - Great

1. Collecting scenes of land pollution. 1 2 3 4 5
2. Field trips to trash dumps. 1 2 3 4 5
3. Observing trash being disposed of by incineration. 1 2 3 4 5
4. Keeping record of solid trash thrown away. 1 2 3 4 5
5. Collecting recyclable materials. 1 2 3 4 5

PRESERVING OUR FORESTS

Unit 23

Grade Levels: 11-12

Content Areas: Social Studies
American Problems

Concepts:

1. There is evidence lumber is becoming scarce.
2. Good conservation practices are essential for future lumber supplies.
3. Replanting of trees has become a necessity.

Performance Objectives:

By the end of the study on Preserving Our Forests, 75% of the participating students will:

1. Comprehend good conservation practices as demonstrated by written essays meeting criteria specified by the teacher.
2. Comprehend skills of tree-leaf identification by maintainng a scrapbook of at least 25 identified tree leaves.
3. Respond favorably with a minimum score of 3.5 on a 5.0 rating scale.

Activities:

1. Students will take a field trip to a wooded area where observing different types of trees will be possible.
2. Students will turn in scrapbook with 25 types of leaves from trees in our area.
3. Show filmstrips or slides on trees in our area.
4. Bring in leaves from the trees for class study.
5. Invite forest ranger to speak to class on fire prevention and forest conservation.
6. Write an essay on the importance of conserving our forests.

Discussion:

1. Why are our forests important?
2. What can we do to conserve our forests?
3. Of what commercial value can our forests be?
4. Of what recreational value are our forests?
5. Which trees are plentiful and which are scarce?
6. What are the major causes of forest destruction?
7. How hard would it be to survive without our forests?
8. What are the major uses of the forest in our area?

Resources:

1. Films
2. Filmstrips
3. Slides
4. Conservation officials
5. Classroom lectures and textbooks
6. Library (books on trees)

Evaluation Procedures:

1. Evaluate student essays.
2. Evaluate students' notebooks.
3. Administer rating scale.
4. Teacher brief written narrative.

PRESERVING OUR FORESTS

RESOURCES

Books:

Bruere, M., Your Forest, Philadelphia, Lippincott, 1957

Everett, T., Living Trees of the World, Garden City, New York, Doubleday, 1968

Grimm, W., Familiar Trees of America, New York, Doubleday, 1966

Kieran, J., Introduction to Trees, New York, Doubleday, 1966

McGermick, J., Life in the Forest, New York, McGraw, 1966

Platt, R., Great American Forest, Englewood Cliffs, N.J., Prentice, 1965

Smith, G., Conservation of Natural Resources, Somerset, N.J., Wiley, 1965

Filmstrips:

1 set of 3	Using Natural Resources	EBE
1	Upland Forest - Despoliation and Imbalance.	Eyegate
1	Lowland Forest - Despoliation and Imbalance	"
1	Ecology of a Forest	IFC
1	Identifying Common Trees	SVE
1	Usury of Our Forest Wisely	EBE
1	Trees	Cornet Films

Filmstrips/Cassette:

4 FS/CAS	The Role of Trees in the Environment	EUC

Filmstrips/Records:

1	Preserve and Protect	NYT

Resources - Additional

PRESERVING OUR FORESTS

- Rating Scale -

Please rate the activities listed below by circling the letter that best shows how effective they were in helping you.

A - Not effective
B - Slightly effective
C - Undecided
D - Effective
E - Very effective

1. Field trip. A B C D E
2. Conservation officers lecture. A B C D E
3. Classroom lecture. A B C D E
4. Library materials. A B C D E
5. Conservation essay. A B C D E
6. Leaf scrapbook. A B C D E
7. Classroom discussion. A B C D E
8. Filmstrips. A B C D E
9. Recordings. A B C D E

CITIZENS ROLE IN A DEMOCRATIC PROCESS

Unit 24

Grade Level: 12

Content Area: American Government

Concepts:

1. Voting is important to the students of all levels.
2. Students should be familiar with voting machines.
3. Students should be familiar with candidates and their stand on Ecology measures.
4. Students should be familiar with issues on ecology needing special legislation.

Performance Objectives:

By the conclusion of the sessions on the citizens role in a democratic government process:

1. All students eligible to register to vote will value the voting priviledge by filing their registration.
2. The participating students respond with a positive score of 3.0 or better on a 5.0 attitude scale.
3. The participating students will comprehend the individual citizens responsibility in a democracy by scoring a minimum of 75% on a teacher made test on the voting process.
4. The participating students will be knowledgeable of some of the major ecological problems by reaching consenus and listing those that need legislative action.

Activities:

1. Students will participate in taking a field trip to court house.
2. While at court house, students will have tour of court rooms, jail, and other offices.
3. Officials will speak to the students on the importance of voting, and also show the students the correct way to use the voting machines.
4. Filmstrips will be shown on the voting process in the class room.
5. Have county judge to speak on the major issues affecting our area such as conservation, etc.
6. Identify problems needing action in our state.

Discussion:

1. Why is voting on a national level as important as the local level?
2. Which issues on a national level will affect our area most?
3. Why is the selection of candidates and their issues on things such as pollution important to our area?
4. How effective are previous programs established in our area toward conservation?
5. Should everyone vote or should there be limitations placed on this?
6. Of what importance is the Australian or secret ballot? Is it effective?
7. What are the requirements for national level candidates compared to local level?

Application:

1. The session can make the students aware of the need to vote-on all levels.

2. Students will bring in ideas of their own on issues being brought forth by candidates on ecology in congress now.
3. Hold panel discussion on pros and cons of ecology measures in legislation now and after hearing both sides hold a mock election to determine effectiveness.
4. Students will write short essay on the voting process and why it is so important in our country.

Resources:

1. Field trip
2. Textbook (lecture in classroom) Kentucky Government by Reeves (John Estill)
3. Filmstrip
4. Filmstrip projector
5. Slides and projector
6. Officials to speak to class
7. Voting machines.

Evaluation Procedures:

1. Administer rating scale.
2. Teacher test.
3. Retain listing of ecological problem.
4. Brief narrative - teacher evaluation.

CITIZENS ROLE IN A DEMOCRATIC PROCESS

RESOURCES

Books:

Mumford, L., Urban Prospect, New York, Harcourt, 1968

Munzer, M., Planning Our Town, New York, Knopf, 1964

Filmstrips/Cassette:

1 set of 7	Ecology: Interaction and Environment	EUC
	There's No Place Like Home	
	Guess What's For Dinner	
	Give and Take	
	The Right Neighborhood	
	It's a Matter of Life or Death	
	Change is the Name of the Game	
	Man - Hero or Villian?	

Resource - Additional

CITIZENS ROLE IN A DEMOCRATIC PROCESS

- Rating Scale -

Below are listed some of the activities concerning our study of citizens role in a democratic process. Please circle the letter that best expresses how you feel about each activity. Do not sign your name.

Answer the questions by using the following letters:

A - Very effective
B - Effective
C - Not important
D - Of no value
E - Undecided

1. Trip to the court house. A B C D E
2. Officials speech on voting. A B C D E
3. Filmstrip on voting. A B C D E
4. Lecture in class. A B C D E
5. Use of voting machines. A B C D E
6. Registering to vote. A B C D E
7. Slides A B C D E
8. Class discussion. A B C D E
9. Essay on voting. A B C D E
10. Reaction to mock election. A B C D E

A STUDY OF OUR LOCAL MINERAL RESOURCES

Unit 25

Grade Levels: 11-12

Concepts:

1. Coal and limestone are the two most important natural resources in this area.
2. Improper management of resources can have a disastrous effect on the future.
3. The two resources from the area and methods of extractions should be understood.
4. An informed person can prevent wasteful practices.
5. Demand and usage of these resources need to be researched (understood).

Performance Objectives:

By the end of the session on the study of local natural resources, participating students will:

1. Comprehend the necessity of legal restrictions by listing those good and bad aspects of present and proposed legislation.
2. Respond favorable by writing a brief narrative description of those activities they liked and disliked.

Activities:

1. Conduct a letter writting session to gather all information on minerals, especially limestone and coal.
2. Plan trips to all kinds of mining operations available, provide experts to talk.
3. Experts in government, mining and transportation are necessary. (Sierra Club).
4. Work up a map of the resources of the area both those under work and the potential areas.
5. Choosing the two local minerals studied, hold panel discussions on each of the two industries.
6. Preparation of questions from the discussion for the experts.
7. Provide the available material;filmstrips, tapes, etc.
8. Students review present laws and proposed laws concerning the mining industry and form consensus on good and bad legislation and list those good and bad aspects.

Discussion:

1. What can be done to conserve our natural resources?
2. What can be expected in the future concerning these resources?
3. What can man do to stop bad practices?
4. What is the chief danger of bad management?
5. What methods can be done by the students to affect the future?
6. What replacement idea might work to control the distribution of the minerals?

Resources:

1. VanSickle, Dirk - "The Ecological Cycle"
2. Kentucky Mines Division
3. U.S. Department of Mines
4. Mine Owner Information
5. Library materials
6. Rockcastle County natural resources materials
7. Congressman reports and other replies from experts
8. Other available reports
9. Sierra Club, etc. information
10. Maps, etc.

Evaluation:

1. Students listing of good and bad legislation.
2. Student narrative report.
3. Teacher brief narrative evaluation.

A STUDY OF OUR LOCAL MINERAL RESOURCES

RESOURCES

Books:

Allen, S., Conserving Natural Resources, New York, McGraw, 1959

English, G., Getting Aquainted With Minerals, New York, McGraw, 1958

Hurbert, C., Minerals and Man, New York, Random, 1968

Pearl, R.M., How to Know the Minerals and Rocks, New York, McGraw, 1955

Tennissen, A.C., Colorful Mineral Identifier, New York, Sterling, 1971

Filmstrips:

Set of six	OUR NATIONAL RESOURCES	Filmstrip House
	Farms and Forest Minerals Water Manufactoring Transportation Skill and Talents	

Slides:

Rocks and Minerals	SVE

Study Prints:

Important Minerals	SVE
Common Rocks	SVE

(Resources Additional)

BLACK GOLD, TEXAS TEA

Unit 26

Grade Levels: 10-11

Concepts:

1. Oil has been discovered in countries on every continent except Antarctica.
2. The need for petroleum is growing.
3. Petroleum is one of the most useful natural resources known to man.

Performance Objectives:

By the end of the activities on the study of oil, participating students will:

1. Comprehend sources and uses of petroleum products by scoring a minimum of 75% on a teacher made test.
2. Responding with a positive score of 3.5 on a 5.0 rating scale.

Activities:

1. Have students do exploratory work on the origin of oil, its early uses and the early methods of drilling a well.
2. View a film about petroleum technology: the geologist survey of rock formations and fossils, the analysis of soil samples for traces of hydrocarbons , and the actual drilling.
3. Students explore the different methods of drilling: the exploratory well which is drilled in search of a new pool; the development well drilled in existing producing areas, and the wildcat well in search of a new field.
4. Students do a survey of the areas of the world where oil exists; the areas of reserved oil yet undrilled; offshore oil and which states control the submerged land.
5. Show how crude oil is transported from the field to the refinery, i.e. pipeline and/or tankers.
6. Investigate the methods of refining oil.
7. Draw charts and posters that show the refining processes.
8. By using magazines, compile a list of products extracted from oil.
9. Investigate demands for petroleum products.

Discussion:

1. When and how was oil first found? Where? What was its uses?
2. How was oil formed?
3. How do rock formations and fossils indicate the presence of oil?
4. What regions of the world are most productive? What regions in the U.S.?
5. What type of oil wells are drilled and what is the procedure of each?
6. How is offshore oil drilled? Which state controls the submerged land?
7. What chemical methods are used for refining?
8. What products do we obtain from petroleum?
9. What forms of energy, such as solor energy or nuclear energy can be substitued for oil, and what is the feasibility of each for the future?
10. Since oil is used in almost every aspect of our society,can we as citizens decrease the waste that occurs with neglect and misuse? If so, in what ways?

11. Since we have a limited supply of oil reserves, what methods of economizing on fuel usage could we employ to ease the burden of a shortage?

Resources:

1. Reference books
2. Films for and from oil companies.
3. Current magazines
4. Rock samples and fossils
5. Poster paper, pencils, magic markers, tempra paint, construction paper, tape.

Evaluation Procedures:

1. Teacher made test
2. Student survey of where oil exists.
3. List of products extracted from oil compiled by the students.
4. Charts and posters of refining process.
5. Brief narrative written by the teacher.
6. Administer rating scale.

BLACK GOLD, TEXAS TEA

RESOURCES

Books:

Drotning, P.T., A Job With a Future in the Petroleum Industry, New York, Grosset and Dunlap, 1969

Floherty, J., Flowing Gold: The Romance of Oil, Philadelphia, Lippincott, 1957

Tugendhat, C., Oil: The Biggest Business, New York, Putnam, 1968

Filmstrip:	Power and Petroleum	Eyegate

Resource - Additional

BLACK GOLD, TEXAS TEA

- Rating Scale -

Below are some activities we carried out in our study of petroleum, the effects it has on our environment, and the refining process. Please express how well you liked them by circling a number from 1-5. This is to be anonymous, do not sign your name.

1 - Disliked
2 - Poor
3 - Fair
4 - Good
5 - Excellent

1. Survey of where oil exists in the world. 1 2 3 4 5
2. List of products obtained from petroleum. 1 2 3 4 5
3. Viewing films. 1 2 3 4 5
4. Posters showing refining process. 1 2 3 4 5
5. Class discussion on petroleum. 1 2 3 4 5

PROVIDING FOR SENIOR CITIZENS

Unit 27

Grade Levels: 11-12

Content Areas: Sociology
Family Living

Concepts:

1. Enviromental changes have created problems for senior citizens in housing, income, medical expenses, nutrition, and recreational needs.
2. Environmental changes can create problems for senior citizens for the future.
3. Proper environmental controls can eliminate future problems for the senior citizen.

Performance Objectives:

By the end of the sessions on providing for senior citizens participating students will:

1. Comprehend environmental influences on the livilihood of our senior citizens by providing a list of needs and written report of their individual projects.
2. Respond favorably to assisting senior citizens with their problems by selecting one senior citizen and performing any services for them.
3. Respond positively by writing a brief narrative report expressing their likes and dislikes about the activities.

Activities:

1. Community survey to determine the number of senior citizens, their needs, and how they are being met.
2. Plan a project to help a senior citizen and carry it out. (Individual Project).
3. Panel Discussion: What effect have environmental changes had on senior citizens. Things to consider:
   a. Medical advances - increased life span
   b. Housing shortage
   c. Air, water, sound, and land pollution
   d. Nutrition
4. Sound Filmstrips:
   a. Water Pollution: A Complex Problem
   b. Solid Waste: A New Pollutant
   c. The Transportation Crisis
   d. The Housing Crisis
   e. The Air Pollution
5. Have student to identify future environmental changes that could create more problems for senior citizens.

Discussion:

1. What are needs of senior citizen today; Are they being met?
2. What medical advances have increased life span? What effect has this had on the population?

3. How has housing shortage effected senior citizen? Have nursing homes helped eliminate this problem? Are there any other agency that helps senior citizens with housing problems?
4. How are the conditions under which senior citizens live contributing to present day environmental problems?

Evaluation Procedures:

1. Collect and retain students'list of needs, written report of service and narrative reaction.
2. Teachers brief narrative evaluation.

PROVIDING FOR SENIOR CITIZENS

RESOURCES

Filmstrips/Cassettes:

1 set of 5	Life In Rural America The Family Farm Cowboys Coal Miner of Appalachia Settlers on Alaska's Frontier Harvesters of the Golden Plains	National Geo.
1 set of 6	Problems of the Cities Introduction Housing Pollution Traffic Social Problems Urban Renewal and City Planning	EUC

Filmstrips/Records:

1 FS/REC	Citizens in the City	NYT

Resources - Additional

THE EFFECTS OF STRIP MINING ON THE ENVIRONMENT

Unit 28

Grade Levels: 10 and 11

Content Area: World History

Concepts:

1. Coal is found in countries on every continent.
2. The need for coal as fuel and by-products is growing.
3. Cheap methods of mining coal has had serious effects on the environment.
4. Legislation has done little to enact laws that require strip mining land to be reclaimed.

Performance Objectives:

By the end of the sessions on strip mining participating students will:

1. Respond with a positive score of 3.0 or better on a 5.0 attitude scale.
2. Participating students will comprehend various techniques of mining and the degree of detrimental environmental effects by scoring a minimum of 75% on a teacher made test.

Activities:

1. Take students to a strip mine where they can see the procedure of mining coal.
2. Have the class to collect samples of strata for further reference in class.
3. Let them see the effects mining has on the land, i.e. polluted streams caused by acid, erosion of land, clearing of forests.
4. Have the students explore the various methods of mining and the machines used in: hydraulic, strip, auger, subterranean; which is most economical, which is the most detrimental, which is used most in this area.
5. Students should explore how land strip mined is reclaimed and what legislation guidelines require the coal operator to reclaim the land.
6. Let them do a survey of the land strip mined in Kentucky and report how many acres have effectively been reclaimed, how many acres have not been reclaimed, and how reclaimed land has been used.
7. Films from the Audubon Society or Sierra Club can enhance the field trip.
8. A resource person can be brought to class to discuss the concern of local people to get more effective strip mine and reclamation laws enacted. The mineral rights in property deeds can be discussed and how coal operators acquire them.
9. Begin discussion of the ways coal is used and the many by-products obtained from it.

Discussion:

1. What we can do, as concerned citizens, to conserve our environment yet obtain coal from the land?
2. What other forms of energy can beused with less pollutants besides coal? Why aren't they used?
3. How can our land be successfully reclaimed?
4. Why are coal operators allowed to strip the land to get the minerals against the owners protest? How are property owners compensated?

5. Which mining method causes least damage to the environment? Which causes the most damage?
6. How is coal used today? What products are obtained from coal?

Resources:

1. Films from Audubon Society and Sierra Club.
2. Resource person.
3. Bus for field trip and permission from parents.
4. Tools for use to obtain samples of rock, coal, acid water from strip mine site.
5. Resource books from the library.

Evaluation Procedures:

1. Teacher made test.
2. Evaluate the students survey of reclaimed land.
3. A brief narrative evaluation written by the teacher.

THE EFFECTS OF STRIP MINING ON THE ENVIRONMENT

RESOURCES

Books:

Picklesimer, V., Proceeding of the Kentucky Mining Industry

Filmstrip:

Mining and Grazing - Eyegate

Filmstrip/Cassette:

Life in Rural America - National Geo.

(Resource - Additional)

THE EFFECTS OF STRIP MINING ON THE ENVIRONMENT

- Checklist -

Listed below are activities we carried out in our study of strip mining, the effects it has had on our environment, and the reclamation process. Please express how well you like them by circling 1-5. This is to be anonymous, do not sign your name.

1 - Disliked
2 - Poor
3 - Fair
4 - Good
5 - Excellent

1. Field trip to strip mine. 1 2 3 4 5

2. Survey of reclaimed land. 1 2 3 4 5

3. Viewing of films. 1 2 3 4 5

4. Guest speaker's program on reclamation. 1 2 3 4 5

5. Class discussion on strip mining. 1 2 3 4 5

CULTURAL PATTERNS REVEALED BY CEMETERY Unit 29

Grade Levels: 9-12 Content Area: Social Studies

Concepts:

1. Past, present, and future generations will show different cultural influences.
2. Changes have taken place in family life.
3. Life span has increased with each generation.
4. Definite ideas and attitudes about death can be related to epitaphs.
5. Economic statue may be revealed from grave markers.
6. Epitaphs also reveal historical culture and constant changing in cultural patterns.

Performance Objectives:

By the end of the study of the cemetery and cultural patterns participating student will:

1. Respond favorably by a written description of what they liked and disliked.
2. Demonstrate a knowledge of cultural patterns of different periods by turning in a survey of comparisons and summary of attitudes about death.

Activities:

1. Take students to the following cemeteries:
    a. Family
    b. Church
    c. Historical
2. Survey to show the following comparisons:
    a. Type of tombstone (shape)
    b. Epitaphs
    c. Average age of death
    d. Reasons for death
    e. Location
    f. Life style of family (trace)
3. Write a summary about definite ideas and attitudes about death.
4. Panel discussion to relate the findings of the three cemeteries visited.

Questions for Discussion:

1. Why were most of the early cemeteries family plots?
2. What brought about the changes for different types of cemeteries?
3. What historical cemeteries are in this area and what historical periods do they cover?
4. What do the different types of tombstones tell us about cultural influence?
5. What do epitaphs indicate in regard to the historical periods in which they were written?
6. What has caused the life span to rise from 18-20th century?
7. What evidence was given about death?
8. What historical role has location of the cemetery played?

9. What obserable facts did you find about the life style of the family from the past to the present?
10. What conclusions did you find about the ideas and attitudes of death.

Resources:

1. Interview with aged of the community.
2. Interview with the caretaker of cemeteries.
3. Filmstrips of past cultures.
4. Courthouse records.

Evaluation Procedures:

1. Collect students' comparative surveys and written summaries.
2. Teacher narrative evaluation.

CULTURAL PATTERNS REVEALED BY CEMETERY

RESOURCES

Books:

Andrews, W., Old Time Punishment, Detroit, Singing Tree, 1970

Bendann, E., Death Customs, New York, Humanities Press, 1970

Berry, J., My Experiences as an Executioner, Detroit, Gale Resources, 1892

Brasch, R., How Did It Begin, New York, McKay, 1966

Byrne, J., Curiosities of the Search-Room, Detroit, Singing Tree, 1970

Durl, J., Victorian Celebration of Death, Detroit, Gale Resources, 1972

Daniels, C., Encyclopedia of Superstition, (Volume 3) Detroit, Gale Resources, 1969

Earle, A., Curious Punishments of Bygone Days, Detroit, Singing Tree, 1969

Harley, T., Moon Lore, Detroit, Singing Tree, 1969

Kippax, J., Churchyard Literature (Epitaphs), Detroit, Singing Tree, 1969

Puckle, B., Funeral Customs, Detroit, Singing Tree, 1968

Rigaud, M., Secrets of VooDoo, New York, Arco, 1969

Wall, J.C., Devils, Detroit, Singing Tree, 1969

Ashton, Devil in Britian and America, Gale Researchs

Beable, Graveyards Humor and Eulogy (Epitaphs), Gale Researchs

Melville, Famous Duels and Assassinations, Gale Researchs

Mew, Traditional Aspects of Hell, Gale Researchs

Taillepied, Treatise of Ghosts, Gale Researchs

Timb, Mysteries of Life, Death, and Futurity, Gale Researchs

Thompson, Hand of Destine, Gale Researchs

Wickeuar, Withcraft and the Black Art, Gale Researchs

Resources- Additional

URBAN LIVING AND THE ENVIRONMENT

Unit 30

Grade Level: 12

Content Area: U.S. Government

Concepts:

1. City life and problems will be a concern for each person who becomes an adult.
2. Many persons from the rural areas may make their homes in the city, and should be educated to city life.
3. Air quality, garbage disposal, and adaquate water management seem to be the cities most serious environmental problems.
4. Residents of an urban area can collectively improve environmental quality through knowledge of the subject and using that knowledge.
5. A study of past environmental mistakes can give people insight to future problem solutions.

Performance Objectives:

By the end of the study of Urban Living and the Environment, participating students will:

1. Acquire a basic knowledge of city environmental problems by scoring a minimum of 75% on a teacher made test.
2. 75% will respond favorably to the study of urban areas as expressed in written narrative reactions to direct field trip experiences as judged by the teacher.

Activities:

1. Organize an overnight trip to a city (Louisville) for first hand experience.
2. Choose three different size cities and collect all available information on environmental problems. One under 1,000; one 50,000 - 100,000; and one 1,000,000 or more.
3. Make a display of the cities problems using a camera and other pictures.
4. Prepare short reports on each city and use the display for illustration.
5. Provide typical zoning and service information from city planning agencies.
6. Provide selective readings in urban history and discuss.
7. Investigate some Kentucky laws and regulations concerning city life quantity.
8. Compile questions on city life and problems within a city to ask a consultant.
9. Show selective films on urban life.
10. Choose some students to read and report certain books to the class.
11. Select a government or environmental agency official to serve as consultant to the class on urban environmental problems.

Discussion:

1. What is the best method of waste disposal?
2. What is the answer to air pollution?
3. How can the water problem of the cities be remedied?
4. If you lived in the city, what laws on the environment would you strongly favor?
5. What are the advantages/disadvantages to living in the city?
6. What ideas would you incorporate into a new city if you were the planner?
7. What services are a must for someone living in the city?
8. Why are cities planned through zoning boards?

Resources and Materials:

1. History test.
2. Magazines.
3. Urban History book.
4. Information obtained from cities, etc.
5. Concultants.
6. Books: (Teachers curriculum guide to conservation education)
    a. Banton, Lewis J., The Unclean Sky
    b. Bregman, J.I., The Pollution Paradox
    c. Carr, Donald E., Death of Sweet Waters
    d. Carson, Rachell, Silent Spring
    e. McMillen, Wheeler, Bugs or People

Evaluation Procedures:

1. Twenty-five question test - Factual Information.
2. Brief teacher written narrative evaluation.
3. Narrative reactions to urban field trips.

URBAN LIVING AND THE ENVIRONMENT

RESOURCES

Books:

Munzer, M., Planning Our Town, New York, Knopf, 1964

Filmstrips: (35mm)

9 FS/REC	Cities of Our Country	Eyegate
1 FS/REC	Citizens in the Cities	NYT
6 FS/REC	Discovering the Inner City	Eyegate
6 FS/REC	Understanding the City	Eyegate

Filmstrips/Cassette:

1 set of 6	Problems of the Cities	EUC

Resources - Additional

POLLUTION CONTRIBUTES TO ENVIRONMENTAL PROBLEMS Unit 31

Grade Levels: 11-12 Content Area: Sociology

Concepts:

1. There are five major types of pollution.
2. Man causes most pollution problems.
3. Every individual can aid pollution reduction.
4. Pollution is harmful to most forms of life.
5. Prevention is the best solution to environmental pollution.

Performance Objectives:

Eleventh and twelfth grade students, by the end of the study of Pollution Contriubtes to Environmental Problems, will:

1. Comprehend the major environmental pollution problems and projection of feasible solutions by compiling a class list of at least ten determined by class consensus.
2. Respond favorably to the various activities as demonstrated by a minimum composite score of 2.0 on a 3.0 rating scale.

Activities:

1. Take students to areas where the five major types of pollution problems exist.
2. View filmstrips concerning the five types of pollution.
3. Team work to show the different types of pollution. Each team will identify the sources of pollution in the five categories.
4. Skit or dramatization to project what living conditions will be ten to twenty-five years from now if nothing is done about these problems.
5. Sit up a model city to show proper environmental controls.
6. Class census to obtain a list of things essential for man's existence.

Discussion:

1. What are the five major types of pollution?
2. What are the causes of the five major types of pollution?
3. How and why is man responsible for pollution?
4. What responsibilities can civil agents assume to prevent pollution in the five areas?
5. What were the greatest pollution problems that you observed in the areas visited?
6. Since we live in a rural area, why should we be concerned with the pollution in larger areas that are so far removed from us?

Materials:

1. The Nystrom Ecology Kit:
    a. Filmstrips - projector, films
    b. Audio tapes

2. Coca-Cola Ecology game.
3. Records and record player.
4. Various materials for saturation.
5. Kits to test water and air pollution, etc.

Evaluation Procedures:

1. Retain pupils' compiled lists.
2. Administer rating scale.
3. Students' brief resume of meaningful experiences.
4. Brief teacher writtem narrative.

POLLUTION CONTRIUBUTES TO ENVIRONMENTAL PROBLEMS

RESOURCES

Books:

Brown, T., Oil On Ice, San Francisco: Sierra Club, 1971

Holdren, J., Energy, San Francisco: Sierra Club, 1971

Marx, W., Oilspills, San Francisco: Sierra Club, 1971

Montaque, K., Mercury, San Francisco: Sierra Club, 1971

Stacks, J.F., Stripping, San Francisco: Sierra Club, 1971

Wood, N., Clearcut, San Francisco: Sierra Club, 1971

Filmstrip/Cassette:

6 FS/CAS	The Pollutants	AIDS
Filmstrip/REC :	Young Scientists Investigate Pollution	SVE

Resources - Additional

POLLUTION CONTRIUBTES TO ENVIRONMENTAL PROBLEMS

- Rating Scale -

Below are listed some things we did in our study of the types of pollution in our environment.

To the right of each activity, circle the number that best expresses how you felt. The numbers are:

1 - Excellent
2 - Good
3 - Poor

1. Viewing filmstrips and listening to tapes. 1 2 3
2. Visits to places where pollution is a problem. 1 2 3
3. Tests for the various pollutants. 1 2 3
4. Finding out about sources of pollution in this country. 1 2 3
5. Doing skit or dramatization from 10-25 years in the future. 1 2 3
6. Design on the model city. 1 2 3
7. Our discussion sessions. 1 2 3
8. Library research. 1 2 3
9. Class census essential for man's existence. 1 2 3

KEY TO PUBLISHERS, PRODUCERS, AND DISTRIBUTORS

AIDS	Audiovisual Instructional Devices, Inc. 209 - 14 41st Street Bayside, New York 11361
ALESCO	American Library and Educational Services, Co. 404 Sette Drive Paramus, New Jersey 17652
ARCO	Arco Publishing Company, Inc. 219 Park Avenue South New York, New York 10003
BRUCE	Bruce Publishing Company Aff. of Crowell Collier and Macmillan , Inc. 850 Third Avenue New York, New York 10022
BUDEK	Herbert E. Budek Company, Inc. 324 Union Street Hackensack, New Jersey 07602
CAF	Current Affairs Film 527 Madison Avenue New York, New York 10017
CHILDRENS PRESS	Childrens Press, Inc. 1224 W. Van Buren Street Chicago, Ill. 60607
CORNET	Cornet Instructional Films 65 E. South Water Street Chicago, Ill. 60607
CROWELL	Crowell Collier and Macmillan, Inc. Orders to Macmillan
CROWN	Crown Publishers, Inc. 419 Park Avenue, S. New York, New York 10016
DAVIS	Davis Publications, Inc. 19-70 Printers Building Worchester, Mass. 01608
DENOYER-GEPPERT	Denoyer-Geppert Company 5235 Ravenswood Avenue Chicago, Ill. 60625
DIAL	Dial Press, Inc. 750 Third Avenue New York, New York 10017

DODD	Dodd-Mead Company 79 Madison Avenue New York, New York 10016
DOUBLEDAY	Doubleday and Company, Inc. 501 Franklin Avenue Garden City, New York 11530
DOUBLEDAY MULT	Doubleday Multimedia Orders to DOUBLEDAY - ALESCO
DUTTON	E.P. Dutton and Company, Inc. 201 Park Avenue South New York, New York 10003
EBE	Encyclopedia Britannica Educational Corp. 425 N. Michigan Avenue Chicago, Ill. 60611
EDC	Educational Dimenstion Corp. Orders to ALESCO
ESB	ESB Edcom Division of ESB Incorporated 19 W. College Avenue Yardley, Pa. 19067
EUC	Education Unlimited Corp. Media Unlimited Division 13001 Puritan Avenue Detroit, Michigan 48227
EYEGATE	Eyegate 146-01 Archer Avenue Jamaica, New York 11435
FILMSTRIP HOUSE	Filmstrip House, Inc. 432 Park Avenue S. New York, New Work 10016
FOLKWAYS	Folkways Records and Service Corp. 121 W. 47th Street New York, New York
FREEMAN	Freeman, Cooper and Co. 1736 Stocton Street San Francisco, California 94133
FUNK	Funk and Wagnalls Company 380 Madison Avenue New York, New York 10017
GALE	Gale Research Company Book Tower Detroit, Michigan 48226

GINN	Ginn and Company 275 Wyman Street Waltham, Mass. 02154
GROSSET	Grosset and Dunlap, Inc. 51 Madison Avenue New York, New York 10010
HARCOURT	Harcourt Brace Jovanovich, Inc. 750 Third Avenue New York, New York 10017
HARPER	Harper and Row Publishers, Inc. Scranton, Pa. 18512
HESTER	Hester and Associates Orders to ALESCO
HOLT	Holt, Rinehart and Winston, Inc. 383 Madison Avenue New York, New York 10017
HOUGHTON	Houghton Mifflin Company 2 Park Street Boston, Mass. 02107
HUBBARD	Hubbard Scientific Orders to STANBOW
HUMANITIES	Humanities Press, Inc. 303 Park Avenue New York, New York 10010
IFC	Imperial Film Company, Inc. Educational Development Corporation Building Post Office Drawer 1007 Lakeland, Florida 33803
JAM HANDY	Jam Handy Orders to SCOTT GRAPHICS
JOHN DAY	John Day Company Division of Intext Educational Pubs. 257 Park Avenue New York, New York 10010
KNOPF	Knopf, Alfred A., Inc. Subs. of Random House, Inc. 201 E. 50th Street New York, New York 10022
LIPPINCOTT	J.B. Lippincott Company E. Washington Square Philadelphia, Pa. 19105

LISTENING LIB	Listening Library 1 Park Avenue Old Greenwich, Conn. 06870
LITTLE	Little Brown and Company 34 Beacon Street Boston, Mass. 02106
LYCEUM	Lyceum Productions, Inc. Orders to ALESCO
McGRAW	McGraw-Hill Book Company 330 W. 42 Street New York, New York 10036
McKAY	David McKay Company, Inc. 750 Third Avenue New York, New York 10017
MacMILLAN	Macmillan Company Subs. of Crowell Collier and Macmillan, Inc. 866 Third Avenue New York, New York 10022
MEREDITH	Meredith Press Hawthorn Books, Inc. 70 5th Avenue New York, New York 10011
MESSNER	Julian Messner, Inc. Orders to SIMON S
MORROW	William Morrow Company, Inc. 6 Hendricks Drive West Caldwell, New Jersey 07006
NAS	National Audubon Society 1130 Fifth Avenue and 82nd Street New York, New York
NAT. GEO.	National Geographic Society National Geographic Educational Services 17th and M Streets N.W. Washington, D.C. 20036
NELSON	Thomas Nelson, Inc. Copewood and Davis Streets Camden, New Jersey 08103
NFBC	National Film Board of Canada Orders to McGRAW - HILL
NYT	New York Times Teaching Resources Films An Educational Service of the New York Times Station Plaza Bedford Hill, New York 10507

OHIO BOOK	Ohio Book Store 726 Main Street Cincinnati, Ohio 45202
PRENTICE	Prentice-Hall, Inc. Route 9W Englewood Cliffs, New Jersey 07632
PUBLIC AFFAIRS	Public Affairs Press 419 New Jersey Avenue S.E. Washington, D.C. 20003
PUTNAM	G.P. Putnam's Sons 200 Madison Avenue New York, New York 10016
RAND	Rand McNally and Company 405 Park Avenue New York, New York 10022
RANDOM	Random House, Inc. Order Department Westminster, Maryland 21157
REILLY	Reilly and Lee Regnery, Henry, Company 114 West Illinois Street Chicago, Ill. 60610
REINHOLD	Reinhold Orders to VAN NOSTRAND
RICHARDS ROSEN	Rosen, Richards, Press, Inc. 29E. 21 Street New York, New York 10010
SCOTT EDUCATION	Scott, Foresman and Company 1900 E. Lake Avenue Glenview, Ill. 60025
SCOTT GRAPHICS	Scott Graphics P.O. Box 8212 Church Street Station New York, New York 10018
SIERRA	Sierra Club Books 1050 Mills Tower San Francisco, California 94104
SIMON S	Simon and Schuster, Inc. 1W. 39th Street New York, New York 10018
SINGING TREE	Singing Tree Press Orders to GALE

S P	Schloat Productions Orders to SSSS
SSSS	Social Studies School Service 10000 Culver Blvd. Culver City, California 90230
STANBOW	Stanley Bowmar Company, Inc. 4 Broadway Valhalla, New York 10595
STERLING	Sterling Publishing Company, Inc. 419 Park Avenue, South New York, New York 10016
SUNBURST	Sunburst Books Imprint of Farrar, Straus, and Giroux, Inc. 19 Union Square W. New York, New York 10003
SVE	Society for Visual Education 1345 Diversy Parkway Chicago, Ill. 60614
TECNIFAX	Tecnifax/Visucom Chicopee, Mass. 01020
TIME-LIFE	Time-Life Books Time and Life Building Rockefeller Center New York, New York 10020
VAN NOSTRAND	Van Nostrand Reinhold Company 450 West 33rd Street New York, New York 10001
WARD	Ward's Natural Science Establishment, Inc. 3000 E. Ridge Road Rochester 9, New York
WATSON	Watson Publishing Company 6608 Hesperia Avenue Reseda, California 91335
WILEY	John Wiley and Sons, Inc. 605 Third Avenue New York, New York 10016
WORLD	World Publishing Company 110 East 59th Street New York, New York 10022

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HIGHLAND ELEMENTARY
Grades 1 - 8

ENVIRONMENTAL EDUCATION

CURRICULUM GUIDE

EXPERIMENTAL DRAFT

Highland Elementary School

Grades K - 8

ESEA Title III
Region V
Tradewind Center
Somerset, Kentucky 42501
July 1973

PREFACE

This curriculum guide is an experimental first draft to be pilot tested and modified during the 1973-74 school year. After pilot testing of the curricular activities and validation of evaluation instruments, the revised guides will be available to other schools.

The student activities in this curriculum guide should be developed with the following three part sequence.

Exploration -- This is a showing experience. Let students view pictures, films, actual environment relative to the concept being taught. Students investigate, read, etc.

Discussion -- Questions should be directed to students to assist them to expand their observations and awareness about their exploratory experiences. Students should be afforded the opportunity to share and discuss their experiences.

Application -- The application of the concepts should be utilized in the discipline areas. This type activity should lead to drawing conclusions, making decisions, problem solving. Application in the final activities that reinforce all others should produce tangible results of the students' efforts.

Each of the three above types of activities should be developed, incorporating as many as possible of the following experiences in priority order, with highest priority commencing with a and continuing through f.

a. Direct experience-- An experience where the student is allowed to be an active participant.

b. Simulated experience-- Where the student uses imagination, such as role playing, pretending-simulation games, dramazation, etc.

c. Audio-visual experience-- Use of sound films, filmstrips with recorded scripts, television, etc.

d. Visual experience-- Identification of the concept by sight using pictures, filmstrips, etc.

e. Audio experience-- The formation of mental images based on sound; use of records, tape recording and sometimes radio can be utilized.

f. Abstract experience-- Consists of teacher explanation, lectures, etc.

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WEATHER OBSERVANCE

Unit 1

Grade Level: 1st

Content Areas: Reading
Math

Concepts:

1. Days have names.
2. Months have names.
3. Months are made up of many days.
4. Weather changes.
5. Weather influences us.

Performance Objectives:

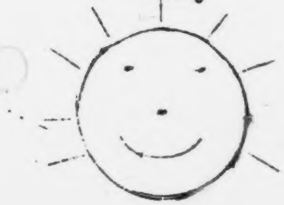
By the conclusion of Weather Observance, participating students will:

1. Display their knowledge of the following instructional variables:
   a. Days of the week
   b. Names of the months
   c. Calendar dates
2. Apply skills of record keeping as measured by keeping a months booklet with weather records within an accuracy of 85%.
3. Respond favorably with a minimum composite score of 2.5 on a 3.0 attitude rating scale.

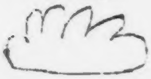
Activities:

1. Children will make a calendarfor November (ex.)
2. Children will observe the weather each day.
3. With teachers help, children will prepare cutoute to represent various kinds of weather. The day will be filled in each day.
4. Children will put the symbols on the calendar each day; they will observe and record the temperature each day.
5. At the end of November (and other months) count the snow days, the sunny days, etc. Record this information.
6. Find the coldest day and the warmest day.
7. Each day the children and teacher may write a short lesson about the day and the weather.
8. Make a booklet about a month.
9. A snowy day picture.
10. Read a "Snowy Day", etc.

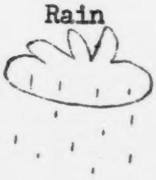
Sunny



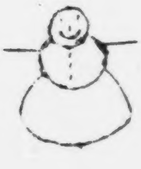
Cloudy



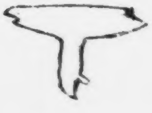
Rain



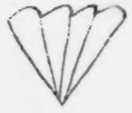
Snow



Cold



Warm



Discussion:

1. What day of the week is it?
2. What is the date?
3. What do you notice about todays' weather?
4. How is it different from yesterdays' weather?
5. What kind of clothes did we wear today? Why?
6. How many days have gone by this month?

Evaluation Procedures:

1. Evaluate students' calendars.
2. Evaluate students' weather booklets.
3. Teacher administer rating scale (orally).
4. Teacher brief written narrative.

WEATHER OBSERVANCE

RESOURCES

Books:

Bonsall, George, The How and Why Wonder Book of Weather, Grosset and Dunlap, New York, 1972

Couchman, J. Kenneth, Examine Your Environment - Mini-Climates, Mine Publishers, Inc., Minneapolis, Minnesota, 1971

Spar, Jerome, The Way of the Weather, Creative Educational Society, Inc., New York, 1962

Schneider, Herman, Everyday Weather and How It Works, McGraw Hill Book Co., 1951

Thompson, Philip, Weather, Time-Life Books, New York, 1968

Weather Forecast Chart

Filmstrips:

Predicting Weather

What Makes the Weather

WEATHER OBSERVANCE

- Rating Scale -

Teacher reads each statement to the children. Have them circle the number that best tells how well they liked the activity that the statement refers to. The numbers are as follows:

1 - Didn't like
2 - Okay
3 - Liked

1. Making weather cutouts. 1 2 3
2. Making a calendar. 1 2 3
3. Making booklet about a month. 1 2 3
4. Keeping a weather record. 1 2 3
5. Checking the temperature with a thermometer. 1 2 3

NATURE AWARENESS

Unit 2

Grade Level: Primary

Content Area: Language Arts

Concepts:

1. Nature means the entire material universe and its' appearance.
2. Awareness means becoming conscious of the beauty of nature.
3. Nouns depict things of the environments.
4. Pronouns express individuals within the environment.
5. Verbs express forms of action through the environmental.

Performance Objectives:

By the end of the session on Nature Awareness, primary students will:

1. Comprehend the natural use of nouns, pronouns and verbs as demonstrated by writing five complete sentences about nature and label the parts of speech.
2. Display their knowledge of things of nature by compiling a grouping of at least ten pictures of natural objects.
3. Respond with positive comments of at least one-half page written expressions of the things they liked most about the study.

Activities:

1. Take students outdoors.
2. Walk around playground.
3. Make observations of noun objects of nature.
4. Do actions sentences about nature aspects.
5. Build an oral vocabulary.
6. Form oral sentences on simple aspects of nature.
7. Cut pictures from magazines that depict things of nature.

Discussion:

1. What did you become aware of while you were outside?
2. Who made the things of nature?
3. What is a noun?
4. What nouns depict things of nature? (Tree, grass, sky)
5. Let's make oral sentences.
6. What is a pronoun?
7. Name pronouns. (Me, she, her, him, it; They express individuals within our environment.)
8. Make oral sentences using pronouns.
9. What is a verb?
10. Discussion of action verbs.

Materials Needed:

1. Pencils and paper (for classroom use).

Resources Needed:

1. Charts
2. Filmstrips
3. Pictures
4. Our Environment: Problem or Promise

Evaluation Procedures:

1. Students' complete sentences.
2. Students' picture collections.
3. Student written comments.

NATURE AWARENESS

RESOURCES

Books:

Buck, Margaret, Small Peto From Woods and Fields, E.M. Hale and Company, Eau Claire, Wisconsin, 1960

Peattie, Donald, Rainbow Book of Nature, World Publishing Company, New York, 1957

Magazine Article:

Earthkeeping, Instructor

CINQUAIN POETRY

Unit 3

Grade Level: Primary

Content Area: Language Arts

Concepts:

1. Cinquain poetry is a French form of writing. It is pronounced "Sin-Can". The literal translation is "five lines". The student will find it simple, yet very expressive.
2. A cinquains' form has a simple form. Its' form is as follows:
   a. Line 1 - 1 word - noun - topic of peom.
   b. Line 2 - 2 words - adjectives describing line one.
   c. Line 3 - 3 words - action of line one.
   d. Line 4 - 4 words - 4 words personal phrase - poets' feeling of line one.
   e. Line 5 - 5 words - one word - noun renames line one.
3. It can be used for individuals describing each other, using the persons' name as line one. This can be done by pairing individuals.
4. Another use of this poetry form is individual writing about some aspect of nature.

Performance Objectives:

By the conclusion of the sessions on Cinquain Poetry, participating students will:

1. Apply skills of cinquain poetry writing by producing their own written cinquain poems related to nature.
2. Respond favorably as determined by the teachers observations and written descriptions of her observation.

Activities:

1. Take students outdoors.
2. Have students observe the things of nature.
3. Promote students appreciation of nature, the things untouched by man, Gods' creation.
4. Pass out worksheet of cinquains.
5. Write a cinquain.

Discussion:

1. Talk about the feelings, attitudes and the beauty of the outdoors.
2. Discuss what words are nouns.
3. Discuss action words.
4. Discuss describing words.
5. Make list of words-nouns, adjectives, and verbs.
6. Discussion capital letters.
7. Read example of cinquains.

Materials Needed:

1. Pencils and paper.

Resources:

1. An appropriate area.
2. Creative Expression Books.

Evaluation Procedures:

1. Retain childrens' poems.
2. Teachers narrative evaluation of effectiveness and student reactions.

CINQUAIN POETRY

Worksheet

Example sheet:

Line 1 - 1 word
Line 2 - 2 words, adjectives descriping line 1
Line 3 - 3 words, action phrase of what line 1 does
Line 4 - 4 words, personal feeling about line 1
Line 5 - 1 word which renames line 1.

Examples:

Personal Cinquain
Bob
Strong, happy
Thinking about tomorrow
Helps me enjoy life
Friend

Nature Cinquain
Sunset
Bright, colorful
Singing into night
Makes me feel happy
Dusk

Write your own cinquain:

1. ____________
2. ____________ ____________
3. ____________ ____________ ____________
4. ____________ ____________ ____________ ____________
5. ____________

CATCHING SNOWFLAKES

Unit 4

Grade Level: Primary

Content Area: Language Arts
Science
Physical Ed.
Art

Concepts:

1. A perfect snowflake has six sides or six points.
2. No two snowflakes will be exactly alike.
3. Snowflakes are not frozen raindrops, but they are made from water vapor.
4. Water can be in two different forms.
5. Snowflakes vary in size.
6. The amount of heat determines whether water is solid or liquid.

Performance Objectives:

By the end of the session on catching snowflakes, all participating students will:

1. Apply skills reading a thermometer as demonstrated by recording temperatures of water, snow, and air as determined by teacher observation and maintaining a check on students as they develop satisfactorly.
2. Comprehend how temperature determines solid and liquid states of water as determined by maintaining records of temperature and conditions of freezing and melting as observed by the teacher and recording students' degree of correct recordings.
3. Apply skills of writing cinquain poetry as demonstrated by their written cinquain creations about snow as determined by teacher judgement of meeting specific format.
4. Respond with a positive score of at least 2.5 on a 3.0 rating scale.

Activities:

1. Take students outdoors when it is snowing. The students take a piece of black construction paper on which to catch the flakes.
2. Have the students use their senses, feel the snow and taste it. Then have the students close their eyes and listen and also smell the snow.
3. Make designs in the snow.
4. Have students form a circle and stand still for five minutes. Then do exercises for five minutes.
5. Look at a snowflake with a magnifying glass.
6. Compare temperature indoors and outside.
7. Pretend to be a snowflake and write a cinquain poem.
8. Make the snow design on paper. (In classroom)
9. Melt some snow on a paper towel to see if there was dirt in it. Determine whether the snow is clean enough to make snow cream.
10. Measure depth of snow in a container then depth of water.
11. Read poems about snow.

12. In a container of water, submerge a thermometer. Record the temperature. Put the container in a freezer on outside in freezing temperature. Bring the frozen container in, check temperature, let melt and observe when temperature begins rising.

Discussion:

1. How many points did the flakes have?
2. Did the snowflakes look alive?
3. Of what do you think snowflakes are made?
4. Did the flakes vary in size?
5. Which one had the prettiest shape - small or large? Why?
6. Were small ones and large ones falling?
7. Describe your feelings in the snow. How did you feel?
8. Did you see the beauty of a snowy day?
9. Why did they melt on your hands and your paper?
10. How did the snow feel?
11. Did it have a taste and smell?
12. Did your body temperature change as you did exercises and stood still?
13. How much did the air temperature change from indoors to the outside?

Evaluation:

1. Teacher maintain checklist on objective 1 and 2.
2. Evaluate student cinquain poetry - objective 3.
3. Administer rating scale.
4. Teacher brief narrative evaluation.

CATCHING SNOWFLAKES

RESOURCES

Books:

Couchman, J. Kenneth, Snow and Ice, Examining Your Environment Series, Mine Publishing Company, Inc., Minneapolis, Minnesota, 1971

Couchman, J. Kenneth, Mini Climates, Examining Your Environment Series, Mine Publishing Company, Inc., Minneapolis, Minnesota, 1971

Bonsall, George, The Snow and Why Wonder Book of Weather, Grosset and Dunlap, Publishers, New York, 1960

Branley, Franklyn M., Snow is Falling, Thomas Crowell Company, New York, 1963

Stanford Library:

Gallant, Roy A., Exploring the Weather, Garden City Books, Garden City, New York, 1952 4-6

Alder, Irving, Hot and Cold, E.M. Hale and Company, Eau Claire, Wisconsin, 1959

Balestrino, Philip, Hot As An Ice Cube, Thomas Y. Crowell Company, New York, 1971 k-3

Podendorf, Illa, The Book of True Weather Experiments, Children's Press, Chicago, 1961 2-4

Filmstrips:

Learning About the Seasons
A 5 How Hot and How Cold
E 6 What Makes the Weather

Multi Media Kit:

Talking Weather Chart

Books and Records:

Keats, Ezra Jack, The Snowy Day

Thermometers

CATCHING SNOWFLAKES

- Rating Scale -

Below are some things you did during our study of snow. Circle the number that best tells how well you liked what we did. Circle 1 if you didn't like it, 2 if it was okay, and 3 if it was great.

1. Catching snowflakes on black paper. 1 2 3
2. Feeling, tasting, smelling, and listening to the snow. 1 2 3
3. Measuring the temperature of the snow, water and the air. 1 2 3
4. Reading poems about snow. 1 2 3
5. Writing poems about snow. 1 2 3
6. Looking at snowflakes through a magnifying glass. 1 2 3

BEAUTY IN OUR ENVIRONMENT

Unit 5

Grade Level: Primary

Content Area: Language Arts

Concepts:

1. Beauty is an interest, a sense of seeing and feeling toward the things in one's natural environment.
2. Natural environment is one's surroundings.

Performance Objectives:

By the end of the study of Beauty in Our Environment, participating students will:

1. Apply skills of identifying and using resources with beauty in the creation of finished products, oral and written presentation, judged by the teacher on a checklist.
2. Respond with a positive score of at least 2.0 on a 3.0 attitude scale.

Activities:

1. Read the book, Happiness Is A Warm Puppy.
2. Take a "soft shoe walk", a soft shoe walk is a walk where there is to be no talking in an outdoor area. Signals: Go, Stop, Look and Listen for sounds.
3. Bring in something you think is beautiful to you.
4. Make a class book Twenty Beautiful Things.
   a. Each student or two students work together to be responsible for at least one page.
   b. Encourage students to make a collection at home, and add to it.
5. Write sentences to illustrate the ideas by the picture.
6. Write a Beauty cinquain.
7. Discuss the many ideas of beauty.
8. Share and Tell.
9. Pantomime something beautiful.
10. Make a (3-D) box (diorama).
11. Take pictures of the place of beauty.

Discussion:

1. What is happiness?
2. How would you define it?
3. Is happiness always the same to each individual?
4. What is beauty?
5. Is beauty the same as happiness, is it always the same, day after day? Why?
6. What is our environment?
7. Can everyone see beauty?
8. Did you see beauty and happiness in your "soft shoe walk"?
9. What did you see that was beautiful? Why?
10. Do you have to look for beauty?
11. Can you feel beautiful on the inside?
12. Can you feel beauty?
13. Can you touch it?
14. What is the most beautiful thing you have ever seen?

Materials Needed:

1. Pencils, paper, art paper, poster board, crayons, glue, scissors, and magazines.

Resources Needed:

1. Films and filmstrips
2. Books: "Happiness is a Warm Puppy"
3. Other books
4. Encyclopedias
5. Camera

Evaluation Procedures:

1. The teacher maintain a checklist of individual student's competencies.
2. The teacher will evaluate the quality of the students performances.
3. The teacher will administer a rating scale.
4. The teacher will make a brief narrative evaluation.

BEAUTY IN OUR ENVIRONMENT

RESOURCES

Books:

Carson, Rachel, Sense of Wonder , Harper and Row, New York, 1956

Stanford Library:

Lubell, Winifred and Cecil, Green is for Growing , Rand McNally and Company, Chicago, 1964 (poetry)

Tressetlt, Alvin, The Dead Tree , Parent's Magazine Press

White, Florence M., Your Friend the Tree , Alfred A. Knopf, New York, 1969 (poetry)

Selected by Jacobs, Leland B., Poetry for Bird Watchers , Garrard Publishing Company, Champaign, Ill., 1970

Creative Expression Books - Scholastic

BEAUTY IN OUR ENVIRONMENT

- Rating Scale -

Below are some questions about our study of beauty in our environment. Circle #1 if you liked it; #2 if it was okay; or #3 if you didn't like it. Please read and answer each question the way you feel. Do not put your name on the paper.

1. How did you like the story? 1 2 3
2. How did you like the "soft shoe walk"? 1 2 3
3. How did you like listening to the beauty you heard? 1 2 3
4. How did you like making the chart of Beautiful Things? 1 2 3
5. How did you like writing a cinquain? 1 2 3
6. How did you like doing a pantomime? 1 2 3
7. How did you like making a 3-D box? 1 2 3

BIRDS IN WINTER

Unit 6

Grade Levels: K-3

Content Areas: Science
Crafts
Art
Music

Concepts:

1. A bird needs the help of people in winter.
2. A bird feeder can be easily prepared.
3. Different birds need different kinds of food.
4. Birds need water.

Performance Objectives:

By the end of the study of "Birds in Winter" the participating students will:

a. Apply skills of bird feeding and watering by making and maintaining feeders and watering devices.
b. Comprehend the following habits and characteristics of local birds as determined by a teacher checklist:
    1. Color markings
    2. Calls
    3. Types of food
    4. Abundance
    5. Relative size (small, medium, large)
c. Respond positively to the Bird Study activities with a composite score of at least 2.0 on a three-point rating scale.

Activities:

1. Take the students on a tour of the school grounds - look for birds.
2. Have them look for birds colorings so that they can name them.
3. Show filmstrips, pictures and books about birds.
4. Collect natural foods for the feeder.
5. Identify types of food for different birds.
6. Investigate these materials.
7. Prepare a feeder and hang it.
8. Prepare a water pan and hang it.
9. Imitate some of the bird calls.
10. Record bird calls outside.
11. Record calls only of identified calls from a record.
12. Incorporate songs, poems and stories about birds.
13. Dramatize songs, poems and stories.
14. Mold birds to be prepared in a kiln, painted or glazed.
15. Make them from bread dough, native clay, ceramic clay, modeling clay or soap.

Discussion:

1. What are some reasons birds need help in winter?
2. How is winter a hardship for all animal life, including man?
3. Why are there no baby birds in winter?
4. Why do birds migrate?
5. Why do some birds stay in cold climates during winter?
6. Where did you see the most birds on our tour? Reason why?
7. Why do we have laws to protect the lives of birds?
8. What are game birds and when are the hunting seasons?
9. Which birds have the brightest color - male or female and why?
10. From recorded bird calls, which ones can you identify?

Resources:

1. Tape recorder
2. Bird call records or tapes
3. Record player
4. Books (especially bird identification)
5. Filmstrips
6. Pictures
7. Ice cream cups
8. Pie tins
9. Coffee cans
10. Pipe cleaners
11. Poultry mesh
12. Suet
13. Bird seed and pods
14. Pine cones and peanut butter
15. Water
16. Make molds of birds to be prepared in a kiln

Evaluation Procedures:

1. Teacher maintain a checklist of individual student's competencies.
2. Teachers will evaluate the quality feeders and waterers made by students.
3. Administer rating scale.
4. Brief narrative evaluation by teachers.

BIRDS

RESOURCES

Books:

Friskey, Margaret, True Book of Birds We Know, Children Press, Chicago, 1954

Lemmon, Robert S., All About Birds, E.M. Hale & Company, Eau Claire, Wisconsin, 1955

Azone, Lucy and Hawkinson, John, Winter Tree Birds, Albert Whitman and Company, Chicago, 1956

Mathewson, Robert, How and Why Wonder Book of Birds, Grosset and Dunlap, New York, 1960

Collins, Henry Hill, Jr., What Bird Is This, Dover Publ,. Inc., New York, 1961

MacBean, John and others, Birds, Examing your Environment Series, Mine Publications, Inc., 1961

Buck, Margaret Waring, Where They Go in Winter, Abington Press, New York, 1968

Musselman, Virginia, Learning About Nature Through Crafts, Stackpole Books, Harrisburg, Pa., 1969

Stanford Library

Selected by Jacobs, Leland B., Poetry for Bird Watchers, Garrard Publishing Co., Champaighn, Ill., 1970

Talking Bird Chart

Record of Bird Calls

Magazines:

Birds - America

The Stunning Birds of Fen Lanodown

BIRDS IN WINTER

- Rating Scale -

Below are some questions about our study of birds. Circle #1 if you didn't like it, #2 if it was O.K., and #3 if it was great. Please read and answer each question the way you feel. Do not put your name on the paper.

1. How did you like looking at books and pictures of birds? 1 2 3
2. How did you like making bird feeders? 1 2 3
3. How did you like collecting bird food outside? 1 2 3
4. How did you like listening to the bird sounds? 1 2 3
5. How did you like making and painting your own birds? 1 2 3
6. How did you like stories and poems about birds? 1 2 3

FEEDING BIRDS IN WINTER

Unit 7

Grade Levels: 1-3

Content Areas: Science
Crafts

Concepts:

1. Birds need help in the winter.
2. Birds feed in different ways.
3. Some birds go to warmer places in the winter.

Performance Objectives:

By the end of the sessions students participating in "Feeding Birds in Winter" will:

1. Comprehend different feeding habits of birds by being able to identify the groups by feeding habits i.e.:
   a. Seed eaters
   b. Scavengers
   c. Insect eaters as determined by teacher assessment of student reports.
2. Comprehend and identify the following incorporated into the student reports as assessed by the teacher.
   a. Wintering and migration habits
   b. Identification by color and markings
   c. Ways people can help birds
   d. Different methods of feeding
3. Respond with a minimum positive score of 2.5 on a 3.0 rating scale.

Activities:

1. Go on a bird walk.
2. Children will bring in pictures of birds.
3. Find out what birds like to eat.
4. Study the different kinds of feeders.
5. Make a bird feeder - or two different ones for the room.
6. Set up a feeding station at school; at home.
7. Develop a bird calendar (name, date, where seen, seen by whom).
8. Prepare melted suet and seed to be packed in ice cream cups for children to take home.
9. Short written reports will be made about certain birds (student's choice).
10. Read The Mystery of the Little Red School House , or other good books featuring birds.
11. Read Poetry for Bird Watchers by Leland B. Jacobs.

Discussion:

1. Why must we help birds during winter? Do all birds like winter weather?
2. Do all birds eat the same foods?
3. Where do some birds prefer to eat?

4. Which foods do birds seem to like best?
5. What else do you think birds need besides food?
6. How many different birds did you see at your bird feeder?
7. Which bird do you think is the prettiest?
8. When do birds usually eat? (Time of day)
9. How are birds different from other animals?
10. How are they like other animals?
11. Which birds have the brightest color - male or female? Why?

Materials:

1. Poster paper
2. Ice cream cups
3. Resource books
4. Building materials
5. Library books

Evaluation Procedures:

1. Teacher will assess each students oral and written report.
2. Administer rating scale.

BIRDS

RESOURCES

Books:

Friskey, Margaret, *True Book of Birds We Know*, Children Press, Chicago, 1954

Azone, Lucy and Hawkinson, John, *Winter Tree Birds*, Albert Whitman and Company, Chicago, 1956

Mathewson, Robert, *How and Why Wonder Book of Birds*, Grosset and Dunlap, New York, 1960

MacBean, John and others, *Birds*, Examining your Environment Series, Mind Publications, Inc., 1961

Buck, Margaret Waring, *Where They Go in Winter*, Abington Press, New York, 1968

Stanford Library

Selected by Jacobs, Leland B., *Poetry for Bird Watchers*, Garrard Publishing Company, Champaign, Ill., 1970

Talking Bird Chart

FEEDING BIRDS IN WINTER

- Rating Scale -

Below are some questions about our study of birds. Circle 1 if you didn't like it; 2 if it was okay; and 3 if it was great.

1. How did you like our bird walk? 1 2 3
2. How did you like "The Little Red School House"? 1 2 3
3. How did you like making bird feeders? 1 2 3
4. Did you like making and keeping the bird calendar? 1 2 3
5. Did you like making the report on birds? 1 2 3

OUR WORLD OF SOUNDS

Unit 6

Grade Level: Primary

Content Areas: Science
Reading
English

Concepts:

1. Sound is something that is heard.
2. Every kind of sound begins in a vibrating object.
3. The vibrations of the object disturbs the air in such a way that sound waves are produced.
4. Sound depends on three things.
5. Sounds vary high and low.
6. Sounds are both pleasant and unpleasant.

Performance Objectives:

By the conclusion of the study of Our World of Sounds, participating students will:

1. Comprehend the difference in pleasant and unpleasant sounds and their cause as measured by a teacher record of students' lists.
2. Respond with a minimum score of 2.0 on a 3.0 rating scale.

Activities:

1. Take students out of doors and walk and listen to sounds.
2. Station students apart and instruct them to listen for nature sounds.
3. Have students listen for pleasant sounds.
4. Make a list of "Sounds We Like to Hear".
5. Make a list of "Sounds We Do Not Like" (noise).
6. Make the sounds you heard.
7. Draw pictures of something that makes a pleasant sound.
8. Draw something that makes a frightening sound.
9. Make a list of sounds that help us.
10. Express what are pleasant sounds.
11. Read a story that has sounds described.
12. Write some sentences about the sounds heard.
13. Listen to sounds of records.
14. Have students lay heads on the desk and have them close their eyes. Make sounds, slam door, drop a book, or any abrupt sound.
15. Read story about sounds and noises in "Splendid Journey" third grade book.
16. Pantomime sounds of objects.

Discussion:

1. What nature sound did you hear?
2. What is a pleasant sound? Give examples.
3. What sounds do you like to hear?
4. What sounds do you not like to hear?
5. What sounds frighten you? Why?

6. What sounds can help you?
7. What happens when you hear a sudden noise?
8. How did it make you feel?
9. How do you feel if someone shouts at you?
10. How do you feel when someone says softly, "Please don't do that"?
11. How do the sounds differ?

Materials Needed:

1. Pencils and paper.
2. Drawing paper and crayons.

Resources Needed:

1. Records, Too Much Noise In My Classroom, and Animals Talk (in my classroom).
2. Filmstrips.
3. Resource books, encyclopedias.
4. Pictures
5. Tape recorder.

Evaluation Procedures:

1. Teacher maintain a checklist of individual students' compentencies.
2. Teacher will evaluate the quality of the performance of the students.
3. Administer rating scale.
4. Brief narrative evaluation by teacher.

OUR WORLD OF SOUNDS

RESOURCES

Stanford Library:

Sicotte, Virginia, A Riot of Quiet, Holt, Rinehart and Winston, New York, 1969

Filmstrip:

Sounds We Hear

OUR WORLD OF SOUNDS

- Rating Scale -

Below are some questions about our study of sounds. Circle #1 if you did not like it, #2 if it was okay, and circle #3 if it was great. Please read and answer each question the way you feel. Do not put your name on the paper.

1. How did you like the walk out-of-doors? 1 2 3
2. How did you like making the charts? 1 2 3
3. How did you like the drawing and art activity? 1 2 3
4. How did you like listening to recorded sounds? 1 2 3
5. How did you like to read the story about sounds? 1 2 3
6. How did you like pantomiming the sounds you heard? 1 2 3

TREES

Unit 9

Grade Level: 3

Content Areas: Language Arts
Science
Math

Concepts:

1. A tree is simply a plant which grows to a large size.
2. A plant is called a tree if it has a woody stem eight feet or more high.
3. A leaf gives the simplest clue of the kind of tree, because no two trees have exactly the same shape of leaf.
4. Flowers and seeds also differ with every kind of tree.
5. There are two main groups of trees.
6. A treehas three main parts.

Performance Objectives:

By the end of the study of Trees, participating students will:

1. Apply skills of tree identification by identifying at least five common trees out of eight from their leaves on a performance test administered by the teacher.
2. Apply creative writing skills by writing a cinquain poem that is judged acceptable by the teacher.
3. Respond favorably to the tree study activities by scoring a minimum composite score of 2.0 on a 3.0 rating scale.

Activities:

1. Take the student to a wooded area.
2. Have the students choose a tree while on their field trip.
3. Have each student find out all there is to find out about their tree.
4. Have the students use their five senses:
    a. Touch the bark, feel the leaves.
    b. Smell the crushed leaves.
    c. Taste broken twigs.
    d. Listen to the sounds of the leaves and branches.
    e. Identify differences in colors and shapes and sizes.
5. Discuss the parts of a tree.
6. Pretend to be a tree trunk (body),bark (skin),roots (feet),branches (arms), twigs (fingers), sway and bend .
7. Set a live tree.
8. Collect leaves to identify and label.
9. Read the story, "Once There Was a Tree".
10. Read poems concerning trees.
11. Give oral report about the students' tree.
12. Write a letter to the local conservation man, Mr. Charles Martin.
13. Draw your tree.
14. Make a spelling list, (tree, leaf, roots, bark).
15. Look for color harmony in the leaves and texture of the bark.

16. Make a leaf print, or leaf rubbing.
17. Take a leaf and make an animal.
18. Write a cinquain.
19. Estimate the height of a tree by standing a student beside it and decide how many times the student would fit against the tree.
20. Give out work sheets.

Discussion:

1. What is a tree?
2. Describe a tree.
3. Are all leaves alike?
4. What is different about them?
5. Do trees have flowers and seeds?
6. What are the two major kinds of trees?
7. What are the parts of the tree?
8. Did you see them? Why not?
9. What colors did you see?
10. How did the leaves feel?
11. How did the bark feel?
12. How did the tree get where it is?
13. How tall would you say a tree would be?

Materials Needed:

1. Paper, pencils, art paper.
2. Yardstick.
3. Wooded area by school yard.

Evaluation Procedures:

1. The teacher maintain a checklist of individual students' competencies.
2. The teacher will evaluate the quality of the students' performances.
3. The teacher will administer a rating scale.
4. The teacher will give a brief narrative evaluation.

TREES

RESOURCES

Books:

Coe, Geoffrey, The How And Why Wonder Book of Trees, Grosset and Dunlap, New York, 1964

Lemmon, Robert, Junior Science Book of Trees, Garrard Press, Champaign, Ill., 1960

Zim, Herbert, Trees, Golden Press, New York, 1956

Hutchins, Ross, This Is A Leaf, Dodd, Mead and Company, New York, 1962

MacBean, J.C., Examine Your Environment - Trees, Mine Publishers, Minneapolis, Minn, 1972

Stanford Library:

Collingwood, G.H., Knowing Your Trees, American Forestry Association, Washington, D.C., 1960

Magazines:

Instructor, Study Unit, Learn to Love Trees

TREES

- Rating Scale -

Below are some questions about our study of trees. Circle #1 if you did not like it, #2 if it was okay, and circle #3 if it was great. Do not put your name on the paper.

1. How did you like going outside? 1 2 3
2. How did you like your tree? 1 2 3
3. How did you like pretending you were a tree? 1 2 3
4. How did you like identifying and labeling the leaves? 1 2 3
5. How did you like setting a real live tree? 1 2 3
6. How did you like reading stories and poems? 1 2 3
7. How did you like drawing your tree? 1 2 3

SOIL EROSION
Causes and Prevention

Unit 10

Grade Level: 3

Content Areas: Reading
Science
Math

Concepts:

1. Soil,our most important natural resource.
2. Soil, like water and air, is necessary to all life on land.
3. Waters' most striking effect on soil is a constant wearing away called soil erosion.
4. Soil has different colors.

Performance Objectives:

By the end of the session on Soil Erosion, participating third graders will:

1. Comprehend major causes and methods of preventing soil erosion as measured by at least 75% competency on a teacher checklist.
2. Respond favorably to direct participation in the designated activities by scoring an average composite score of at least 2.0 on a 3.0 rating scale.

Activities:

1. Take children around the playground. Point out the places that have become eroded by water.
2. Let students note the color of the soil and feel the soil.
3. Have students choose an area for their own observation of:
   a. Signs of plant and animal life.
   b. Eroded soil caused by water.
4. Have students bring in soil samples.
5. Let students give oral reports on their individual observations.
6. Let students make suggestions for the prevention of soil erosion.
7. Collect pictures and write slogans.
8. Shake jars of soil and water.
9. Make posters of causes and preventions of soil erosion.

Discussion:

1. Why is soil a rich and valuable resource to us?
2. Can soil be replaced once it is gone?
3. How is water important to the soil?
4. How is water a destroying factor to the soil?
5. What is soil erosion?
6. What causes it?
7. Can it be prevented? How?
8. Was plant life present in the eroded places?
9. Were there any signs of animal life?

10. Does the soil have different colors?
11. What happened to the water and soil in the jar we shook?
12. What is muddy water?
13. Do you know where it comes from?
14. When we pour our jars of muddy water away, what happens?
15. Have we gotten rid of soil?
16. Why is a stream, or creek or river, muddy after a rain?
17. Why must we try to prevent soil erosion?

Materials Needed:

1. Pencils and paper.
2. Art paper and crayons.

Resources Needed:

1. Books
2. Films and filmstrips
3. Pictures
4. Mr. Charles Martin, local conservation man

Evaluation Procedure:

1. Teacher maintain a checklist of individual students' competencies.
2. Teacher will evaluate the quality of the students' performance.
3. Administer rating scale.
4. A brief narrative evaluation by the teacher.

Extended Activities:

1. On a rainy day, observe the same areas again.
2. If there were ditches and gullies near the area, check the length and width and depth and record them for further use.
3. After several hard rains, remeasure ditches.

SOIL EROSION
Causes and Prevention

RESOURCES

Books:

Gates, Richard, The True Book of Conservation, Children's Press, 1959 3-4

Forth, Henry and Jacobs, Hyde S., Field Guide To Soils, Houghton, Mifflin Co., Boston, 1971

Cooper, Elizabeth, Science in Your Own Backyard,

Stanford Library:

Allen, Shirley and Leonard, Justin Wilkinson, Justice, Conserving Natural Resources, McGraw-Hill Book Company, New York, 1966

Russell, Helen, Soil, A Field Trip Guide, Little, Brown and Co., Boston, 1972

Talley, Naomi, To Save The Soil, Dial Press, 1965

Matthews, Wm. H. III, A First Book, Soils, Franklin Watts, Inc.,New York, 1970

Filmstrips:

Soil and Its Uses

SOIL EROSION
Causes and Prevention

- Rating Scale -

Below are some questions about our study of soil erosion. Please circle the number that best expresses the way you felt about each activity. The numbers are:

1 - Did not like
2 - Okay
3 - Great

Please read and answer each question the way you feel. Do not put your name on the paper.

1. How did you like the outdoor trip? 1 2 3

2. How did you like giving the oral reports? 1 2 3

3. How did you like collecting soil samples? 1 2 3

4. How did you like collecting the pictures? 1 2 3

5. How did you like writing slogans? 1 2 3

TEMPERATURE'S RISING

Unit 11

Grade Level: K-4

Content Areas: Science
Math

Concepts:

1. Dark colors absorb more heat than light colors.
2. Light colors reflect more heat than dark colors.
3. The temperature of snow and ice remains constant.
4. The application of salt lowers the freezing and melting point of ice.
5. Temperature is a measurement of the amount of heat in a substance.
6. Loose snow takes 10 times the volume of its water content.

Performance Objectives:

By the end of the lesson, 75% of the primary students will:

1. Comprehend the concept of heat absorption and reflection by written example of its beneficial effects.
2. Be able to apply skills of reading a thermometer by taking temperature of different substances as observed by the teacher.
3. Respond favorably to the designated activities with a 75% positive score on a behavior checklist.

Activities: (Winter)

1. When the ground is covered with heavy snow, take the students outdoors. Students measure the snow depth and record the snow temperature. Students mark off five areas of 1 square foot each, sprinkle powdered tempra and other powdered substances with variations of light and dark colors on each plot (1 color per plot). At 30 minute intervals record the evidence of various melting rates. Record temperatures of each plot to show that temperatures remain constant. Reason: When temperature rises above 32 F. snow melts i.e. changes to water and runs off.
2. Have students take five various shades of construction paper and place on five other plots. Secure paper and follow procedures of activity 1.
3. Take a ten inch deep container, fill with loose snow (do not pack), measure the depth of the loose snow. Let the snow completely melt, then measure the depth of water in the container. This should be approximately 1 inch. Students record measurements and observe impurities found in the snow.

   To prove the concept that heat content determines temperature, have students record the temperature of snow. Record again when all snow has turned to water. Take 3 or 4 more temperature readings at 30 minute intervals with the container left setting at room temperature to show the temperature rise as the water absorbs more heat.
4. Mix a cup of salt with snow in a gallon container or in a one square

foot area. Record the temperature after five or ten minutes. The temperature will drop to about 0° F. Salt lowers the freezing and melting point of pure water to 0° F.
5. Have children observe different areas of the school yard. Observe cars, roof tops, blacktop, etc. What evidence is there of differences in melting snow?
6. Write childrens' observations on an experience chart or black board.
7. Discuss color of clothing in relation to the sun; color of clothing in summer and winter; color of roofs.

Activities: (Summer)

1. On a sunny summer day, take children outside.
2. Place a piece of white construction paper next to a black piece.
3. Five or ten minutes later let the children feel the papers.
4. Fill five or six cans ½ full of water. Use tempra paint to color the water light and dark colors. Leave one can without paint. Place thermometer in each can. Wait 15-20 minutes then check readings.
5. Record observations on the blackboard.
6. Discuss color in relation to the sun.

Materials and Resources:

1. Construction paper
2. Cans
3. Paint
4. Thermometer
5. Filmstrips

Evaluation:

1. Administer behavior checklist
2. Students written reports
3. Teacher observation and narrative evaluation.

TEMPERATURE'S RISING

RESOURCES

Books:

Stanford Library

Balestrino, Philip, Hot As An Ice Cube, Thomas Y. Crowell Company, N.Y., 1971 k-3

Asimov, Isaac, Light, Follett Publishing Company, Chicago, 1970 k-3

Simon, Seymour, Let's Try-It-Out Light and Dark, McGraw-Hill Book Company, 1970

Simon, Seymour, Let's Try-It-Out...Wet and Dry, McGraw-Hill Book Company, New York, 1969 1-3

Podendorf, Illa, Color, Stepping Into Science Series, Children's Press, Chicago, 1971

Filmstrips:

A 5 How Hot and How Cold

TEMPERATURE'S RISING

- Checklist -

Below are some things we did in our study of heat absorbtion by color. Circle the number that best tells how you felt about what we did.
1. Disliked; 2. Okay; 3. Good

Winter Activities:

1. Going outside and measuring snow depth. 1 2 3
2. Using different colors and checking the differences in melting. 1 2 3
3. Looking at different places where snow melts faster or slower. 1 2 3
4. Melting snow into water and measuring. 1 2 3
5. Mixing salt with snow and recording temperatures. 1 2 3
6. Covering snow areas with colored construction paper. 1 2 3

Summer Activities:

1. Going outside. 1 2 3
2. Using black and white construction paper and feeling the difference in heat. 1 2 3
3. Filling cans with water and recording temperatures. 1 2 3
4. Discussion sessions. 1 2 3

KEEPING OUR ENVIRONMENT BEAUTIFUL

Unit 12

Grade Levels: Primary
Intermediate

Content Areas: Social Studies
English
Art

Concepts:

1. Many people are litterbugs.
2. A litterbug makes our environment look bad and does harm.
3. Keeping our environment beautiful and clean is everyones' responsibility.

Performance Objectives:

By the end of this study, participating students will:

1. Comprehend those attributes that constitue a litterbug as determined by their lists, collections and pictures that demonstrate to the teacher their awareness of those attributes and a written narrative of what they learned.
2. Respond to the activities of "Keeping Our Environment Beautiful" with a minimum score of 3.0 on a 5.0 attitude scale.

Activities:

1. Introduce the word litterbug.
2. Make a list on the board of different things suggested by children telling what they think a litterbug is.
3. Teach the word environment.
4. Let children tell how litter destroys our environment.
5. Show filmstrips on how litter messes up our environment.
6. Make a list of things to do to keep from littering.
7. Have children bring pictures from magazines showing how litter destroys our environment. Fix a bulletin board.
8. Pass out large paper bags for children to go on playground and collect litter.
9. Survey the playground first and just take a look at the litter and talk about it. Take a picture of the litter with a camera.
10. List the kinds of litter found.
11. Have a committee to get a trash barrel to put on playground. Print "Litter Barrel" in big letters on the can.
12. Make and put up posters, "Do Not Litter On The School Ground", "Please Use Trash Cans For Litter". Put them up outside and in halls of school.
13. After a week or so take another survey of playground to see if posters and signs and litter barrels have helped keep the playground any cleaner.
14. Play the litter scavenger hunt game. Divide up into groups. Have paper bags. Let each group see if they have something that starts with each letter of the alphabet.

Discussion:

1. What is a litterbug?
2. What is litter?
3. Are you a litterbug?
4. What is our environment?
5. Have you seen places where litterbugs have been?
6. What does litter do to our environment?
7. Let children tell about different places they have seen that litter upset the picture of our environment.
8. What can we do to keep from being a litterbug?
9. Does your family use a litterbag in the family car?
10. What does your family do with their trash?
11. What types of litter were found on the playground?
12. Where would be the best place to put trash cans on the school ground? Where should posters be put?
13. What were the most common types of litter found?

Materials Needed:

1. Brown paper bags
2. Poster paper
3. Magic markers
4. Pencils
5. Camera
6. Litter barrel

Evaluation Procedures:

1. Student narrative.
2. Attitude rating scale.
3. Teacher brief narrative.

KEEPING OUR ENVIRONMENT BEAUTIFUL

RESOURCES

Books:

Carson, Rachel, Sense of Wonder, Harper and Row, New York, 1956

Kodak, Improve Your Environment, Fight Pollution With Pictures, Eastman Kodak Company, 1970

Koestner, E.J., ed., The Do-It-Yourself Environmental Handbook, Little, Brown and Company, Boston, 1971

Coke-Ecology Game

KEEPING OUR ENVIRONMENT BEAUTIFUL

- Rating Scale -

Below are some questions about our study of Keeping Our Environment Clean by not littering. Please circle the number that best tells your feelings about them.

1 - Hated it
2 - Not too good
3 - Fair
4 - Good
5 - Great

1. How did you like discussing litterbugs? 1 2 3 4 5
2. Did you like listing things to stop littering? 1 2 3 4 5
3. Did you like collecting litter? 1 2 3 4 5
4. Did you enjoy the filmstrips on littered environment? 1 2 3 4 5
5. Did you like preparing a litter barrel? 1 2 3 4 5
6. Did you like making posters? 1 2 3 4 5
7. Did you enjoy the litter scavenger hunt? 1 2 3 4 5

NESTING HABITS OF BIRDS

Unit 13

Grade Levels: 3-5

Content Areas: Math
Language
Arts
Crafts

Concepts:

1. Each bird builds a nest exactly like the nest of all other birds of the same species.
2. Plant materials are used in most nests.
3. Some birds change their nests and nesting places to meet new conditions.
4. Most birds use their nest only one time.
5. It takes about a week to build a nest.

Performance Objectives:

By the end of the study of bird nests, the students will comprehend the complexity involved in finding and building a satisfactory habitat, by identifying and recognizing the most commonly used materials and locations for bird nest.

By the end of these sessions, students involved in the study of bird nests will respond positively to the activities with a composit score of at least 3.0 on a 5.0 point rating scale.

Activities:

1. Children examine nest carefully - noticing size, structure, materials, and location where found.
2. Have children write a brief conclusion of their observations and general identification of type of bird who built nest.
3. Do some research through field books and encyclopedias to help support their conclusions.
4. Write a short essay on one topic relating to birds.
5. Have children pretend he is a bird that constructed these nests. (What adventures did you have? Why did you choose this particular location? Did the weather bother you...or help you? Are you proud of your looks?)
6. Take nest apart and put like materials together.
7. Have each child construct a set of five problems related to the nest and give to a neighbor to solve.
8. Do a water color drawing of nest and paste bits of the nest to the finished pictures.
9. Make bird feeders.
10. Take a field walk to find where the bird might have lived.
11. Bring in old no-longer used nests.
12. Find a nest being built and observe how long it takes the bird to complete it.

Discussion:

1. Since the collection of materials of the nest, can you call it a nest?
2. How many elements are in each set?
3. What kind of materials are most commonly used to build nests?
4. Are all bird nests alike? How? How not?
5. Are all similiar birds' nests in similiar locations?
6. Which bird's nest was the most complex? Simpliest?
7. Do two different types of birds ever use the same nest?
8. Where do you think the birds found the materials for their nests?
9. What was the most unusual material used in the nest?
10. How long did it take the bird to build her nest?
11. Why did it take so long?

Resources:

1. Wire
2. Board

Evaluation:

1. Keep record of students ability to identify and recognize nesting materials.
2. Administer rating scale.
3. Brief teacher narrative evaluation.

BIRDS

RESOURCES

Books:

Friskey, Margaret, True Book of Birds We Know, Children Press, Chicago, 1954

Lemmon, Robert S., All About Birds, E.M. Hale and Company, Eau Claire, Wisconsin, 1955

Azone, Lucy and Hawkinson, John, Winter Tree Birds, Albert Whitman and Company, Chicago, 1956

Mathewson, Robert, How and Why Wonder Book of Birds, Grosset and Dunlap, New York, 1960b

MacBean, John and others, Birds, Examining your Environment Series, Mine Publications, Inc., 1961

Buck, Margaret Waring, Where They Go In Winter, Abington Press, New York, 1968

Musselman, Virginia W., Learning About Nature Through Crafts, Stackpole Co., Harrisburg, Pa., 1969

Stanford Library:

Selected by Jacobs, Leland B., Poetry for Bird Watchers, Garrard Publishing Company, Champaign, Ill., 1970

Talking Bird Chart

NESTING HABITS OF BIRDS

- Rating Scale -

Below are things you did during our study of bird nests. Please circle the number that best expresses how you felt about each activity.

1 - Didn't like
2 - Okay
3 - Great

1. Gathering old bird nests. 1 2 3

2. Examining what the nests are made of. 1 2 3

3. Researching (reading about bird nest building). 1 2 3

4. Making drawings of nests. 1 2 3

5. Making bird feeders. 1 2 3

CEMETERY REVELATIONS

Unit 14

Grade Levels: 4-6

Content Areas: Social Studies
Math
Art
Language Arts

Concepts:

1. Epitaphs reveal historical cultures.
2. Grave markers reveal family economic status.
3. Cultural patterns are constantly changing.

Performance Objectives:

By the end of the session, students involved in the cemetery study will:

1. Comprehend the cultural pattern of different periods by producing descriptions of the various cultures.
2. Respond favorably to the activities with a composite score of at least 3.0 on a 5.0 Likert Scale.

Activities:

1. Take the children to a local cemetery.
2. Study the epitaphs.
3. Observe lettering and design.
4. Compare the materials of the stones.
5. Identify the early settlers of the community.
6. As far as possible, identify the occupations.
7. Identify the oldest and youngest persons at death. Calculate ages, numbers of deaths, and average ages.
8. Identify the oldest and newest grave.
9. Rubbings of designs.
10. Show filmstrip and review resources of past civilizations.
11. Develop skits or drama projecting into the future cultural patterns.
12. Promote oral discussion, oral reports, panel discussions, etc.
13. Student committees or individuals may make murals and drawings.

Discussion:

1. What would be acceptable behavior when visiting a cemetery?
2. What is the significance of the different types of lettering on the stones?
3. What causes some of the lettering to be unreadable?
4. Compare cultural patterns from earliest days to the present and project to the future.
5. Do the epitaphs imply cause of death?
6. Are there any names on the tombstones of people living in the community today?
7. What are some burial patterns of ancient cultures?

Materials Needed:

1. Paper and pencils.
2. Unlined paper, butcher paper, or newsprint.
3. Colored chalk, crayons, paint.

Resources:

1. Older community citizen.
2. Local cemetery.

Evaluation Procedures:

1. At the end of the session, the teacher writes a brief evaluation of her observations.
2. Administer the rating scale.
3. Retain students' composite descriptions of cultural patterns.

Note: The teacher may eliminate questions if the activity was not carried out and substitute questions that relate to activities not covered.

CEMETERY REVELATIONS

- Rating Scale -

Below are some questions about our study of the cemetery. Please circle the number that best tells your feelings. The numbers from 1-5 are as follows:

1 - Hated it
2 - Not too good
3 - Fair
4 - Good
5 - Great

1. Was our visit to the cemetery interesting to you? 1 2 3 4 5

2. Was our study of how people lived at different periods of time interesting? 1 2 3 4 5

3. Did you like giving your oral reports? 1 2 3 4 5

4. Did you like doing the art work? 1 2 3 4 5

5. Did you like the discussions? 1 2 3 4 5

Tell what you liked best about what you did:

I KNOW A TREE
through my senses

Unit 15

Grade Levels: 3,4,5

Content Areas:
Language Arts
Arts
Music
Social Studies
Math
Health
Physical Education
Science

Concepts:

1. A tree is made of many things which we can see.
2. A tree has many "feelings".
3. We can know a lot about a tree without chopping it down.
4. The outside of a tree is very important.
5. A tree can be a personal friend.
6. If you know a lot about one kind of tree, you can quickly learn about another kind of tree.

Performance Objectives:

By the end of the sessions all participating students studying trees through their senses will:

1. Comprehend similarities and differences in trees by listing them as observed through their senses as judged satisfactory by the teachers criteria.
2. Respond with a composite score of at least 2.0 on a 3.0 rating scale.

Activities:

1. Read poems and stories about trees.
2. Write your local conservation man.
3. Choose a tree and report orally about it.
4. Notice color harmony in leaves.
5. Do a leaf rubbing.
6. Draw a picture of a leaf; then change its looks by adding to it to form animals, people, things.
7. Visit a wooded area and hike.
8. Sing "A Tree on a High Hill" and do movements with it.
9. Measure a trees' shadow.
10. Estimate the height of a tree.
11. Touch the bark, feeling the leaves.
12. Smell crushed leaves.
13. Taste broken twigs.
14. Listen to the sounds of leaves.
15. See the differences in colors, shapes, and sizes of trees and leaves.
16. Discuss roots and leaves.

Discussion:

LOOK

1. Is my tree taller or shorter than most of the other trees?
2. Is there another tree the same shape as mine?
3. Do the branches reach up, hang down, or go straight out?
4. Do its roots show?
5. What is the color of the bark?
6. What is the shape of the leaf? Draw it.
7. Are there two leaves the same shape and size?
8. How long is the longest leaf you can find?
9. How long is the shortest leaf you can find?
10. Are the leaves on my tree the same color as those on the other trees nearby?
11. Is the leaf the same color on the front as the back?
12. Are the leaves single or in groups?
13. Hold the leaf to the light. Does the light shine through?

FEEL
(the bark of your tree)

1. Is the bark ridged? Scaly? Rough? Smooth?
2. Can you think of anything else that feels like your tree's bark?
3. Feel the bark of a twig off your tree. Is it smooth? Scaly? Rough? Sticky? Furry? Hairy?
4. Can you think of another word that tells how the twig feels?

FEEL
(the leaf)

1. Is it thick, thin, leathery, stiff, prickly, sharp, delicate, wooly, hairy, tough?
2. Does the back of the leaf feel the same as the front? If not, how is it different?
3. Is there anything else your hands tell you about your tree?

LISTEN

1. Is there any sound that belongs to your tree?

SMELL

1. Break off a small twig. How does it smell? (sweet, spicy, sour, sharp, bad, no smell, bitter)?
2. Crush a leaf. How does it smell?
3. Crush a leaf from two different trees. Do they smell the same as the leaf on your tree?

TASTE
(break a twig)

1. How does it taste?
2. If it tastes alright, chew it a little. Is it sweet, sour, bitter?
3. Do you know anything else that tastes like this? What?
4. Chew a leaf. How does it taste?

SEEK & FIND

1. Can you find flowers or seeds that belong to your tree?
2. Did you see any insects on it?
3. What did they look like?
4. Did you see any birds on it? What did they look like?
5. Now you know your tree, see if you can find it a name.
   My tree is called ______________________________.

Resources:

1. A wooded area.
2. Paper and pencils.
3. Books and pictures of trees - "Trees of Your State", "Your Friend the Tree".
4. Song: A Tree on A High Hill .
5. Measuring Tape.

Evaluation Procedures:

1. Administer rating scale.
2. Teachers' brief written narrative.

TREES

RESOURCES

Books:

Hutchins, Rose E., This Is A Leaf, Dodd, Mead and Company, New York, 1963

Lemmon, Robert, Junior Science Book of Trees, Garrard Press, Champaign, Ill., 1960

Coe, Coffey, How and Why Wonder Book of Trees, Grosset & Dunlap, New York, 1964

Zim, Herbert and Martin, Alexander, Trees, Golden Press, 1956

MacBean and others, Trees, Examining Your Environment Series, Winston Press, Minneapolis, Minn., 1962

Stanford Library:

Fenton, Carroll Land and Pallas, Dorothy Constance, Trees and Their World, E.M. Hale and Company, Eau Claire, Wisconsin, 1957

White, Florence M., Your Friend, The Tree, Alfred A. Knopf, New York, 1969

Dudley, Ruth H., Our American Trees, Thomas Y. Crowell Company, New York, 1956

Tresselt, Alvin, The Dead Tree, Parents' Magazine Press, New York, 1972 k-2

F-9 Sonny Squirrel and The Pine Tree - Primary

Picture - Story Study Sets: Broadleaf Trees

U.S. Forestry
Earthkeeping "Why You Must Teach It"

TREES

- Rating Scale -

Below are some questions about our study of trees. Circle 1 if you didn't like it, 2 if it was okay, or 3 if it was great.

Please read and answer each question the way You feel. Do not put your name on your paper.

1. How did you like doing the leaf rubbings? 1 2 3
2. How did you like reading stories and poems about trees? 1 2 3
3. Did you enjoy writing your local conservation man? 1 2 3
4. Did you like the song we sang? 1 2 3
5. Did you enjoy the feel, smell, and taste study of your tree? 1 2 3

CATCHING SNOWFLAKES

Grade Levels: 4-5 Content Area: Science

Concepts:

1. There must be certain weather conditions in order to have snow.
2. Snow is frozen water vapor.
3. Snow forms in the sky and falls to the earth.
4. Snow always appears as tiny six-sided crystals.

Performance Objectives:

1. Students involved in the study of snowflakes will comprehend the color, size, shape, texture, and components of snow by observing falling snow by the end of the study.
2. By the end of the session, students participating in the study of snowflakes will respond positively to the activities with a composite score of at least 3.0 on a 5.0 point scale.

Activities:

1. Take children outdoors when snow is falling.
2. Each child is to catch snowflakes on a sheet of black construction paper.
3. Observe the snowflakes as they fall on the paper.
4. Back in the classroom each child should make a list of his observations.
5. Now, discuss the lists made by children. See how many differences were observed.
6. Do reports on snowflakes using the encyclopedia.
7. Cut out snowflakes using the patterns or children can make their own.
8. Write poems about snow.

Discussion:

1. What did you observe about snowflakes?
2. What is the size and shape?
3. What is the color?
4. What is a snowflake composed of?
5. What makes a snowflake form?
6. What weather conditions are prevalent in order to have snow?
7. Do all states have snow? Why or why not?
8. Do snowflakes have different textures?
9. Is there artificial snow?
10. Could snow be helpful?
11. Could snow be harmful?
12. Is there red or green snow?
13. What makes red and green snow in Greenland?

Materials Needed:

1. Black construction paper.
2. White paper for cutting snowflakes.
3. Pattern of snowflakes.

CATCHING SNOWFLAKES

RESOURCES

Books:

Couchman, J. Kenneth, Snow and Ice, Examining Your Environment Series, Mine Publications, Inc., Minneapolis, Minnesota, 1971

Couchman, J. Kenneth, Mini Climates, Examining Your Environment Series, Mine Publications, Inc., Minneapolis, Minnesota, 1971

Bonsall, George, The How and Why Wonder Book of Weather, Grossett and Dunlap, Publishers, New York, 1960

Branley, Franklyn M., Snow is Falling, Thomas Y. Crowell Company, New York, 1963

Stanford Library:

Gallant, Roy A., Exploring the Weather, Garden City Books, Garden City, New York, 1952 4-6

Alder, Irving, Hot and Cold, E.M. Hale and Company, Eau Claire, Wisconsin, 1959

Balestrino, Philip, Hot as an Ice Cube, Thomas Y. Crowell Company, New York, 1971 k-3

Podendorf, Illa, The True Book of Weather Experiments , Children's Press, Chicago, 1961 2-4

Filmstrips:

Learning About the Seasons
A 5 How Hot and How Cold
E 6 What Makes the Weather

Multi Media Kit:

Talking Weather Chart

Books and Records:

Keats, Ezra Jack, The Snowy Day

CATCHING SNOWFLAKES

- Rating Scale -

Below are some things we did during our study of snowflakes. Circle the number that best tells how you felt about what we did. The numbers represent your feelings as follows:

1 - Disliked
2 - Not so good
3 - Okay
4 - Good
5 - Great

1. Going outside when it was snowing. 1 2 3 4 5

2. Catching snowflakes. 1 2 3 4 5

3. Making reports on snowflakes. 1 2 3 4 5

4. Cutting out snowflakes patterns. 1 2 3 4 5

5. Writing poems about snow. 1 2 3 4 5

VISITING PLANT COMMUNITIES

Unit 17

Grade Levels: 4-6

Content Areas: Science
Art

Concepts:

1. The plant community is made up of three areas: wooded area, field, edge of field.
2. Many types of plants are found in the three areas.
3. There is a difference in the plant growth in each area.
4. Plant succession is a gradual process.

Performance Objectives:

By the end of the study of plant life, students will comprehend necessary conditions for plant growth in various environments by generating written list of environmental factors that are favorable and unfavorable for plant growth and reproduction.

By the end of these activities students participating in the plant study will respond positively to the activities with a composite score of at least 3.0 on a 5.0 point Likert Attitude Scale.

Activities:

1. Take a field trip to an area where all three areas (wooded, field, edge) can be explored.
2. Have the class divided into three groups, and assign each group to an area.
3. Each group should move to all areas and make a list of the things that can be found in each area.
4. Compare the lists to see if there are any common members.
5. Examine the soil found in each area.
6. Research can be done on plants unfamiliar to the students.
7. Some plants can be replanted in different environments.
8. Terrariums may be set up with different plants.
9. Make posters illustrating the plants found in each area.
10. Show filmstrips on plant life.
11. Make diorama (3-D box), booklets and murals.

Discussion:

1. How many kinds of plants did you find?
2. Which area had the most growth?
3. Why do you think that area had more growth?
4. Which area had the least amount of growth? Why?
5. Were there any common members growing in any two areas?
6. Did you notice any difference in the soil in the three areas?
7. What would contribute to the growth of the plants?
8. Were there different kinds of trees?

Materials Needed:

1. Paper and pencils
2. Paper bags to collect plants
3. Large jar
4. Poster paper, crayons, colored pencils

Evaluation:

1. Administer attitude scale.
2. Retain composite list of environmental conditions.
3. Teacher comments on her observations.

VISITING PLANT COMMUNITIES

RESOURCES

Books:

Buck, Margaret Waring, In Woods and Fields, Abington Press, New York, 1950

Baker, Sam Sinclair, The Indoor and Outdoor Grow - It Book, Random House, New York, 1966

Buck, Margaret Waring, In Yards and Gardens, Abington Press, New York

Musselman, Virginia, Learning About Nature Through Indoor Gardening, Stackpole Company, 1972, Harrisburg, Pa.

Kane, Henry, Tale of a Pond, Alfred Knopf, New York, 1970

Buck, Margaret Waring, Small Pets From Woods and Fields, Abington Press, N.Y.

Wood, Dorothy, Plants With Seeds, Follett Publishing Company, Chicago, 1963

Zim, Herbert S., Plants, Harcourt, Brace and World, New York, 1947

Zim, Herbert S., What's Inside of Plants?, Wm. Morrow Company, New York, 1952

Stanford Library:

Dickinson, Alice, The First Book of Plants, Franklin Watts, New York, 1953

Hutchins, Ross, Plants Without Leaves, Dodd, Mead and Company, New York, 1966

Baker, Jeffery J.W., The Vital Process Photosynthesis, Doubleday and Company, Garden City, New York, 1969 5-8

Hutchins, Ross E., The Amazing Seeds, Dodd, Mead and Company, New York, 1965

Filmstrips:

E-43 Nonflowering Plants

Transparency:

Parts of a Plant

Study - Sets:

Spring Wild Flowers

Vertical File:

Plants

VISITING PLANT COMMUNITIES

- Rating Scale -

Below are some questions about our study of plant communities. Please circle the number that best tells your feelings. The numbers from 1 to 5 are as follows:

1 - Hated it
2 - Not too good
3 - Fair
4 - Good
5 - Great

1. Did you like working outside to learn about plants? 1 2 3 4 5

2. Did you like working in small groups? 1 2 3 4 5

3. Did you enjoy making the things we did - booklets, murals, dioramas, and terrariums? 1 2 3 4 5

4. Did you like our discussions about plants? 1 2 3 4 5

5. Was it fun to replant, care for plants, and watch them grow? 1 2 3 4 5

6. Was what you learned about plants interesting? 1 2 3 4 5

SEASONS

Unit 18

Grade Levels: 3,4,5

Content Areas: Science
Art
Reading

Concepts:

1. There are four seasons.
2. Each season has a name.
3. Our surroundings change with the seasons.
4. Our habits of living change with the seasons.

Performance Objectives:

By the end of the study of Seasons, students will comprehend the difference in seasons by producing written and oral reports.

Students participating in the study of Seasons will respond postively to the activities with a composite score of at least 3.0 on a 5.0 attitude scale.

Activities:

1. Take children outside to the same place each season starting with fall, winter, spring.
2. Take a walk around the school yard.
3. Observe the surroundings each time.
4. Talk about what you see; ask questions.
5. Children should take notes.
6. List characteristics of that season on the board.
7. Have children make the same list so they can compare the four seasons.
8. Students can write stories, poems, make reports about each season.
9. Draw a picture using the same scene for each season using the colors of the season.
10. Make a mural of the seasons.
11. Show filmstrips.
12. Make booklets with drawings and evaluations of the seasons.
13. Read poems about seasons, trees, etc.
14. Take pictures of each season with a camera; display these pictures.

Discussion:

1. Are there leaves on the trees?
2. What happened to the leaves?
3. What kind of weather?
4. How the air feels?
5. Are plants growing?
6. What about the color of leaves, grass, the sky?
7. What kind of clothes are you wearing? Do you need a coat?
8. Are there any animals?

9. What was the difference in each season?
10. What are the names of the seasons?
11. How do our ways of living change with the seasons?

Materials needed:

1. Area of school ground
2. Paper; pencils; crayons
3. Cameras - colored film

Resources needed:

1. Filmstrips
2. Books

Evaluation:

1. The teachers written brief evaluation of her obervations.
2. Children's reports.
3. Administer the rating scale.

SEASONS

RESOURCES

Books:

Buck, Margaret Waring, Where They Go In Winter, Abington Press, New York, 1968

Couchman, J. Kenneth, Snow and Ice, Examining Your Environment Series, Mine Publications, Inc., Minneapolis, Minn., 1971

Carson, Rachel, Sense of Wonder, Harper and Row, New York, 1956

Stanford Library:

Lubell, Winifred and Cecil, Green is For Growing, Rand McNally and Company, Chicago, 1964 (poetry)

Balugh, Glenn O., Not Only For Ducks, McGraw-Hill Book Company, New York, 1954 2-4

Gillelan, G. Howard, The Young Sportsman's Guide to Photography, Thomas Nelson and Sons, New York, 1964

Filmstrips:

Learning About the Seasons

The Big Snow

Records and Books:

Keats, Ezra Jack, The Snowy Day

SEASONS

- Rating Scale -

Below are some questions about our study of the seasons. Please circle the number that best expresses your feelings.

1 - Hated it
2 - Not too good
3 - Fair
4 - Good
5 - Great

1. Was this study of seasons interesting to you? 1 2 3 4 5

2. Did you like exploring the same areas each season? 1 2 3 4 5

3. Did you like giving reports and reading stories about the seasons? 1 2 3 4 5

4. Did you like the discussions? 1 2 3 4 5

5. Did you like the art work? 1 2 3 4 5

Unit 19

TREES

Grade Levels: 4-5

Content Areas: Science
English
Art
Math

Concepts:

1. Roots, stems, and leaves are part of trees.
2. Trees need sunshine, water, and air.
3. Trees are used for lumber.
4. Trees are not alike.
5. Trees are both beautiful and helpful.

Performance Objectives:

By the end of the study about trees, participating students will comprehend the size, shape, parts, and uses of trees as determined by their written description to a level satisfactory to the teacher.

At the end of the session, participating students will respond positively to the tree study experience by scoring a minimum of 3.0 on a 5.0 point attitude scale.

Activities:

1. Visit a wooded area near the school. Observe kinds of trees.
2. Study the pattern, texture, and color of bark. Do rubbings of bark.
3. Look at the shapes of trees - draw simple shapes such as triangles, half-circles, square, etc.
4. Observe different colors of leaves found in the fall.
5. Make leaf prints - spatter, rubbings.
6. Look for a stump - figure how it was cut and what it might have been used for.
7. Plant some small seedlings of different trees - see which grows the fastest. (Arbor Day would be a good time.)
8. Gather leaves and compare shape, color, and size.
9. Look for types of nuts which have fallen from different trees.
10. Note the relationship between the size of the tree and the size of the nut.
11. Estimate the height of a tree by standing a person beside it and decide how often he would fit against the tree.
12. Have a tasting party - taste nuts from local trees. Taste other nuts such as Brazil, English walnut, etc.
13. Measure shadows of trees.
14. Write poems about trees.

Discussion:

1. How many kinds of trees did you find?

2. What did you observe about the texture, pattern, and color of the bark?
3. How many different leaves did you find? (color, shape, size)
4. Why was the stump cut?
5. How was the stump cut?
6. Name some uses of a tree.
7. What can be made from lumber?
8. How many kinds of nuts did you find?
9. Are nuts edible?
10. What are the purpose of nuts?
11. Why do you think trees are important in our society?
12. What are the important parts of a tree?
13. What did you observe from the rubbing of bark and leaves?
14. How do trees get food and water?

Materials Needed:

1. Pencil - paper
2. Crayons
3. Two small seedlings
4. Nuts for tasting party

Resources:

1. Wooded area
2. Encyclopedias
3. Pictures of trees
4. Other reference books

Evaluation:

1. Collection of students' written work.
2. Administer rating scale.

TREES

RESOURCES

Books:

Hutchins, Rose E., This Is a Leaf, Dodd, Mead and Company, New York, 1962

Lemmon, Robert, Junior Science Book of Trees, Garrard Press, Champaign, Ill., 1960

Coe, Coffey, How and Why Wonder Book of Trees, Grosset , Dunlap, New York, 1964

Zim, Herbert and Martin, Alexander, Trees, Golden Press, 1956

MacBean and others, Trees, Examining Your Environment Series, Winston Press, Minneapolis, Minn., 1962

Stanford Library:

Fenton, Carroll Land and Pallas, Dorothy Constance, Trees and Their World, E.M. Hale and Company, Eau Claire, Wisconsin, 1957

White, Florence M., Your Friend, The Tree, Alfred A. Knopf, New York, 1969

Dudley, Ruth H., Our American Trees, Thomas Y. Crowell Company, New York, 1956

Filmstrips:

F-9 Sonny Squirrel and The Pine Tree

Picture - Story Study Sets:

Broadleaf Trees

TREES

- Rating Scale -

Below are statements concerning our study of trees. Please circle the number that best expresses how you feel about each statement.

1 - Disliked
2 - Poor
3 - Fair
4 - Good
5 - Excellent

1. Visit to the woods.	1 2 3 4 5
2. Making leaf prints.	1 2 3 4 5
3. Planting of tree seedlings.	1 2 3 4 5
4. Gathering leaves.	1 2 3 4 5
5. Gathering of nuts.	1 2 3 4 5
6. Measuring trees shadows.	1 2 3 4 5
7. Estimating heights of trees.	1 2 3 4 5
8. Writing poems about trees.	1 2 3 4 5

INDOOR GARDENING

Unit 20

Grade Levels: 4 and 5

Content Areas: Cultural Experiences
Math
Science

Concepts:

1. Good, moisture, heat and light are essential for plant growth.
2. Plants may be started from root or stem cuttings as well as seeds.
3. Plants get their moisture from both air and soil.
4. Plant life is essential to human life.

Performance Objectives:

By the end of the activities on Indoor Gardening, participating 4th and 5th grade students will:

1. Comprehend the major requirements for plant growth as demonstrated through propogating, transplanting and caring for classroom plants as measured by at least 75% of their plants growing.
2. Respond favorably to the plant growing activities with a minimum score of 2.0 on a 3.0 rating scale.

Activities:

1. Select the right soil for plants (Example: Cacti need soil with sand). Go to woods to get soil.
2. Take a carrot and cut off wilted leaves at top. Cut off two inches from large end. Place in a shallow dish on a layer of pebbles and piece of charcoal. Put carrot in dish, with cut end down. Place pebbles and stones around carrot. Fill dish half full of water.
3. Sweet potato vine - Place a fat sound potato in jar filled partly with water. The top of jar should hold up potato so that only the narrow end of it is in water. It would be good to stick toothpicks in potato to support it at mouth of jar.
4. Sweet potato plant - Select a fat sound potato. Cut into pieces. Make sure each piece has "eyes" on it. Each of these eyes is a bud from which a new plant will grow. Put cuttings in pot of garden soil. Keep soil damp.
5. White potato plant - Do same as sweet potato plant.
6. Grapefruit plant - This is started from seeds. Do best if started in February. Take seeds from grapefruit, soak them overnight. Plant next day 3 or 4 seeds, pointed end up. Plant seed one-quarter of inch beneath surface. Place in warm, dark place. Water seed every couple of days. (Also use orange seeds or lemon seeds.)
7. Morning Glory - Make a scratch on each seed with sharp instrument. Water will soak through scratched surface. Plant through scratched surface. Plant in two inch pot. In a few days, plants will grow. Let plants grow 3 or 4 weeks in little pots. Then move to pots four inches across top. Three or four weeks later, transplant to six inch pots. Attach climbing supports.
8. Measure the growth of plants by constructing a graph.

Discussion:

1. What is essential for growing plants?
2. What is the best daytime temperature for most plants? (70°)
3. How many days did it take the seed to sprout?
4. How many days did it take the root plants to sprout?
5. Do some plants use more water than others?
6. Do plants use different types of soil?
7. How much sun is required for the plants?
8. If plants don't grow, what could have gone wrong?
9. What is the best nightime temperature? (65°)
10. Do plants need love ?
11. How can one love a plant?
12. Do the plants have different shapes of leaves?
13. How do plants get moisture?
14. Why is plant life so important to our environment?

Materials Needed:

1. Seeds
2. Dishes
3. Pans
4. Soil
5. Carrots
6. Turnips

Evaluation Procedures:

1. Teacher record of pupils' plants growing.
2. Student attitude checklist.
3. Teacher brief written narrative.

INDOOR GARDENING

RESOURCES

Books:

Baker, Samm, The Indoor and Outdoor Grow-It Book, Random House, New York, 1965

Fletcher, Helen, Indoor Gardens, Teachers' Publishing Corporation, Darien, Conn., 1968

Musselman, Virginia, Learning About Nature Through Indoor Gardening. Stackpole Company, Harrisburg, Pa., 1972

Stanford Library:

Carleton, R. Milton, Indoor Gardening Fun, Reilly and Lee Books, Chicago, Illinois, 1970

INDOOR GARDENING

- Rating Scale -

Below are statements about our activities on Indoor Gardening. Please circle the number that best tells how you feel about each statement. The numbers are:

1 - Did not like
2 - Okay
3 - Great

1. Collecting and preparing soil. 1 2 3

2. Planting seeds. 1 2 3

3. Fixing the potatoes and carrots. 1 2 3

4. Watering and caring for plants. 1 2 3

5. Measuring and keeping records of plant growth. 1 2 3

OUTDOOR ENGLISH GAMES

Unit 21

Grade Level: 6

Content Area: Language Arts

Concepts:

1. Parts of speech give a standardized system for oral and written communication.
2. Descriptive phrases are often illustrated through song titles, nursery rhymes, poems, commercials, etc.
3. Nature provides many opportunities to develop vocabulary, parts of speech and descriptive phrases.

Performance Objectives:

1. By the end of the outdoor English games the participating students will learn that parts of speech are used in many ways beyond the English class and will apply these skills with written exercises and the identification of parts of speech with a minimum of 75% accuracy.
2. They will respond favorable to the activities by writing a brief description paragraph expressing their feelings about this activity.

Activities:

1. The class will sit in the grass in a circle.
2. The students will take turns naming song title that describe nature (color adjectives) Example: "Green, Green Grass of Home", and "Red, Red Robin".
3. The students will be divided into two groups (boys vs. girls or half the class vs. other half).
4. Points will be given for each side naming a song title describing nature.
5. The students will name song titles about nature that have prepositional phrases in them. Example: "In the Good Old Summer Time", and"Down By the Lazy River".
6. As one part of speech is exhausted another part of speech can be introduced.
7. This activity can extend to the use of rhymes, jingles, book titles, etc. to identify other parts of speech.

Discussion:

1. Do the clouds and sky bring any song titles to your mind?
2. How many song titles can you think of that mention rivers? Water?
3. Trees are mentioned in how many of the song titles?
4. Are there any song titles that mention soil and dirt?
5. Are there any titles that speak directly against pollution?

Resources:

1. English book.

Materials:

1. Paper and pencils

OUTDOOR ENGLISH GAMES

- Rating Scale -

Below are some questions about our outdoor English games. Please circle the number that best tells your feelings.

1 - Hated it
2 - Waste of time
3 - Okay
4 - Enjoyed it
5 - Would like to do it again

1. Was the outdoor English game interesting to you? 1 2 3 4 5

2. Did you like naming song titles that describe the out-of-doors? 1 2 3 4 5

3. Did you like the discussion? 1 2 3 4 5

4. Did you like finding adjectives in other stories and titles? 1 2 3 4 5

5. Did you like writing your own sentences using the parts of speech that you have learned? 1 2 3 4 5

AIR: POLLUTION OR SOLUTION

Unit 22

Grade Levels: 4-8

Content Areas:
Science
Language Arts
Art
Social Studies

Concepts:

1. Air is a limited resource.
2. Living things need air.
3. If we change our atmosphere, we may change our climate.
4. Air is made up of different gases and particles.
5. Air pollution in New York may affect Kentucky.
6. Everything man wishes to get rid of must go somewhere whether it be into air, water, or soil. Nothing is destroyed, it changes form.
7. There are many polluters of our air. Cars are the greatest.
8. Air pollution is harmful to man and materials.
9. Man can reduce pollution within a democratic process.
10. Misuse of technology has had an adverse effect on natural resouces, human health, animal life.

Performance Objectives:

At the end of this study on air pollution, participating students will:

1. Demonstrate their comprehension of the causes of air pollution by preparing pictures and lists of things they observed in their community that pollute air and place them in a notebook.
2. Apply their understandings of prevention of pollution by performing at least three activities that could reduce pollution, as measured by a teacher record on each child.
3. Respond positively to designated activities by scoring 3.0 on a 5.0 scale.

Teacher Activity:

1. Assemble materials needed such as:
   a. Wax paper
   b. Vaseline
   c. Candle
   d. Paper
   e. Microscope
   f. Films
   g. Filters
2. Plan for a day to have cars in parking lot to be tested for the amount of exhaust. (See activity #6).

Student Activity:

1. Have students to compute the amount of air in the room, with no air from outside source. From these figures determine how long we could live in the room. Introduce the idea of plants that add oxygen to air and purifies the air. Students should begin to see the room as a closed system.

2. Use trip to Mars from Coca-Cola ecology game.
3. Have two students do an experiment by taking oxygen out of air.
4. Do an experiment to show what is in smoke.
5. Place a collection paper, in different places, out for particles in air.
6. Have students help to prepare bulletin board on sources of pollution.
7. Students will prepare separate notebooks on pollution which include pictures of sources of air pollution, notes from class, an individual experiment, etc.
8. Have a student to find out who to write in order to complain about air pollution.
9. Have a group of students to preview films on air pollution in our environment. Problem or promise. Administer pre-test to students.
10. Have different groups to discuss what types of pollutants are due to car exhaust.
11. Make a model display of sources of pollutinn - small cars, factories, etc., use toys, boxes, etc.
12. Student reports on solutions to air pollution and choose which activities he wishes to do.
13. Have students draw sketches of the "villians of the air". Example: Harry Hydrocarbon, etc.
14. Have students give reports on respiratory diseases that are increased by air pollution.
15. A debate on the S.S.T. jet. Yes or No.
16. Use a mechanical smoker to show tar and nicotine in cigarettes.
17. Have students collect newspaper articles on air pollution and listen for a pollution count on the radio.
18. Fill in map of county, state, with places of different sources of pollution.
19. Use telephone books as a reference for places that pollute.
20. Compute the number of breaths you take in a minute by counting the movement of your chest cavity.

Discussion:

1. How much air do we have in the atmosphere?
2. What makes up the air?
3. Why do we need air?
4. What are some properties of air?
5. How does air travel?
6. Where do solid particles in the air come from?
7. What areas of the school do you think has the greatest amount of air pollution?
8. What do cars and trucks exhaust add to the air?
9. Do all automobiles give off the same amount of pollution?
10. What are some of the different things that cause smoke to be darker?
11. Which chimney's in your community appear to add most to air pollution?
12. How does air pollution affect your life and the life of other people?
13. What is smog? What causes it?
14. What can you do to reduce air pollution?
15. How does air pollution hurt people, plants, animals and materials?

Materials Needed:

1. Collection paper
2. Vaseline
3. Microscope

4. Generator jar
5. Pictures
6. Clay, boxes, art supplies, etc.

Resources:

1. Pollution, Wentworth, Crichman, Mackery, Stecher
2. Pollution: A Handbook for Teachers, Dorothy Needham
3. Coca-Cola ecology game
4. Our Environment: Problem or Solution
5. Books, phamplets, vertical file, magazines.

Evaluation Procedures:

1. Administer rating scale.
2. Collections of car exhaust and student collections of pollution particles will be kept.
3. Student notebooks will be kept.
4. Teacher comments on new observations.

AIR: POLLUTION OR SOLUTION

RESOURCES

Books:

DeBell, Garrett, ed., The Environmental Handbook, Ballatine Books, New York 1970

Needham, Dorothy, Pollution: A Handbook for Teachers, Scholastic Book Services, New York, 1970

Keen, Martin, The How and Why Wonder Book of Air and Water, Grosset and Dunlap, New York, 1969

Wentworth, Daniel, Examining Your Environment - Pollution, Mine Publishers, Minneapolis, Minn., 1971

Magazine Articles:

Pollution --A Teaching and Action Program, Grade Teacher

Air and Water Pollution, Instructor

Environmental Pollution, reprint from World Book Encyclopedia

Booklets:

Professor Clean Asks: What is Air Pollution, free from General Motors Corp., Detroit, Michigan 48202

Coke - Ecology game

Pollution - media kit

Filmstrips:

Air and Life

The Ocean of Air We Live In

AIR: POLLUTION OR SOLUTION

- Rating Scale -

Below are some questions on our study of air pollution. Circle the number that best tells your feelings. The numbers are from 1 to 5 as follows:

1 - Hated it
2 - Not too good
3 - Fair
4 - Good
5 - Great

1. Did you like collecting pollution particles? 1 2 3 4 5

2. Did you find the Trip to Mars fun? 1 2 3 4 5

3. Did you like collecting pictures, articles, and books on air pollution? 1 2 3 4 5

4. Did you enjoy preparing notebooks? 1 2 3 4 5

5. How do you like making things with your hands? 1 2 3 4 5

6. Did you enjoy the debates, discussions, and reports? 1 2 3 4 5

7. How did you feel after performing the anti-pollution activities in your daily life? 1 2 3 4 5

8. How did you like the filmstrips? 1 2 3 4 5

ROCKS: THEIR FORMATION AND USES

Unit 23

Grade Levels: 1-8

Content Areas:
Science
Language Arts
Social Studie
Art

Concepts:

1. Rocks are different but have similar properties based on how they are formed.
2. Due to their properties, they have many uses.
3. Rocks may contain fossils.
4. Rocks can be worn away by erosion and changed to sand.
5. Rocks are located in many areas.
6. An area with a large amount of rock on top shows a wearing away of topsoil.
7. The history of earth is in her rocks.
8. There are natural and man-made rocks.
9. Rocks have beauty.

Performance Objectives:

By the end of the study of rocks, participating students will:

1. Comprehend the following as determined by a teacher checklist:
    a. Sizes
    b. Shapes
    c. Hardness
    d. Color
    e. Natural -- man-made
    f. Texture
    g. Formation
2. Comprehend various uses of rocks and rock products by the class compiling an extensive list that will be retained by the teacher.
3. Respond positively to the rock study by scoring 2.0 on a 3.0 rating scale (primary students) and 3.0 and a 5.0 rating scale (4-8 students).

Teacher Activity:

1. Ask students to collect different type rocks from home,school, and other areas.
2. Prepare trays or a table for rocks to be placed.
3. Distribute papers for students' activities.

Student Activities:

1. Collecting rocks.
2. Grouping rocks according to size, color, shapes, hardness and texture.
3. Test rock hardness by using fingernail for hardness of 1, toothpicks for hardness of 2, penny for hardness of 3, and a nail for hardness of 4.

4. Use a drop of vinegar of hydrochloric acid to test for limestone in rocks. (Bubbles will appear if lime is present.)
5. Have students draw a conclusion about the hardness of lime rocks.
6. Have students examine rocks for fossils.
7. Have students play a map game of where rocks are located.
8. View a filmstrip on formation and uses of rocks.
9. Prepare collages, murals, drawings, or displays on how rocks are used in nature and by man.
10. Sculpturing, painting of rocks, and mosaic work with rocks could be done.
11. Compare rocks and plastic materials.
12. Pretend you are a mountain, a pebble, a glacier, or a rock used in a building, highway, etc., and write a story.
13. From the study of the rocks in this area, write what life was like in this area in prehistoric time.
14. Look at a prepared collection of rocks.
15. Make a concrete block, a brick, or plaster.
16. Have students attend a central Kentucky rock exhibit in Lexington, Kentucky.
17. Visit Hall's Gap rock explorations and look at a sample of this rare rock.
18. Look at pictures of Grand Canyon. Look for beauty given to us by rocks.
19. Listen to "Grand Canyon Suite", "Night on Bare Mountain", " Rocky Mountain Highway", and other songs about mountains.

Discussion:

1. Ask where you find different types of rocks.
2. How did the rocks get there?
3. What are the properties of rocks?
4. Why do rocks have different colors, sizes, and hardness?
5. Discuss formation of rocks.
6. Discuss filmstrip, "A Story of Our Earth","Rocks and Soil".
7. How do rocks hold a key to history?
8. What are the uses of rocks?
9. Discuss murals, collages, and displays.

Materials:

1. Rocks, trays, labeling tape
2. Plastic bags
3. Magazines, paper, pens, pencils, scissors, glue
4. Toothpicks, pennies, nails, vinegar
5. Map of local area and Kentucky

Resources:

1. Filmstrip "A Story of Our Earth"
2. Prepared collection of rocks
3. Plaster of paris
4. Books on rocks -- How and Why
5. Rock hounds from local area or clubs
6. Person who works in a quarry, concrete, etc.

7. Books:
   Earth's Story - Ames
   Mountains - Goetz
   Rock's, Rivers and Earth - Schneider
   Rocks and Minerals - Hyler
   Rocks All Around Us - Easy-to-Read-Series
   Rocks and Minerals - Irving
   The Earth - Life
   The Story of Rocks - Shuttlesworth

Evaluation Procedure:

1. Maintaining checklist.
2. Retaining the composite list of rock uses.
3. Administer rating scale.

ROCKS: THEIR FORMATION AND USES

RESOURCES

Books:

Zim, Herbert, Rocks and Minerals, Golden Press, New York, 1957

Ames, Gerald and Wyler, Rose, Earth's Story, Creative Educational Society, Inc., New York, 1957

Goetz, Delia, Mountains, William Morrow and Company, New York, 1962

Schneider, Herman and Nina, Rocks, Rivers and Earth, William R. Scott, Inc., New York, 1952

Sutton, Felix, How and Why Wonder Book of the Earth, Grosse and Dunlap, New York, 1960

White, Anne Terry, Rocks All Around Us, Random House, New York, 1959

Beiser, Arthur, The Earth, Time Life Series, New York, 1962

Pearl, Richard, How to Know The Minerals and Rocks, New American Library, Signet Book, 1955

Filmstrips:

E 21 A Story of Our Earth, Rocks and Soil
E 41 Volcanoes and Earthquakes

Transparencies:

Mountain Building

Magazine Articles:

Earthquake: America's Greatest Earthquake
Volcanoes: Mountains That Blow Their Tops

Records:

Rocky Mountain Highway
Grand Canyon Suite
Night on Bare Mountain

ROCKS: THEIR FORMATION AND USES

- Rating Scale -
Primary

Below are some questions about our study of rocks. Circle #1 if you didn't like it, #2 if it was okay, and #3 if it was great. Please read and answer each question the way you feel. Do not put your name on the paper.

1. How did you like collecting rocks? 1 2 3
2. How did you like making rock pictures (mosaics)? 1 2 3
3. How did you like pretending you were a rock or mountain and writing a story? 1 2 3
4. How did you like your field trip to find and study rocks? 1 2 3
5. How did you like reading about, looking at pictures and filmstrips about rocks? 1 2 3
6. How did you like learning how people use different kinds of rocks? 1 2 3

ROCKS: THEIR FORMATION AND USES

- Rating Scale -

4 - 8

7

Below are some questions concerning our study of rock formations and uses. Please circle the number that best tells your feelings. Do not put your name on the paper.

The numbers from 1-5 are as follows:

1 - Hated it
2 - Not too good
3 - Fair
4 - Good
5 - Great

1. Did you like making rock collections 1 2 3 4 5

2. Did you like making rock pictures (mosaics)? 1 2 3 4 5

3. Did you like the field trip or trips? 1 2 3 4 5

4. Did you like conducting experiments with rocks? 1 2 3 4 5

5. Did you enjoy finding out the many uses of rocks and rock materials? 1 2 3 4 5

ESTIMATING AND MEASURING DISTANCES Unit 24

Grade Levels: 6,7,8 Content Area: Math

Concepts:

1. Estimated measurement is a valuable tool.
2. Accurate measurements are sometimes essential.
3. The required distance for a moving object to stop is proportional to its velocity.

Performance Objectives:

By the conclusion of Estimating and Measuring Distances:

1. 75% of the participating students will apply estimating skills by estimating three specified distances within an accuracy of 80% of the actual measurement as measured by the teachers' record on each child.
2. 90% of the participating students will respond with a minimum positive score of 3.0 on a 5.0 rating scale.

Activities:

1. Determine students' pace length.
2. Estimate distances by pacing.
3. Estimate the length and width of school grounds.
4. Estimate the size of the ball court by observation pacing. Measure with a 100 ft. tape for accuracy.
5. Estimate one acre by pacing 210 ft. X 210 ft. or 70 yds. X 70 yds.
6. Determine various distances by visual observation:
   a. Determine number of feet in a mile.
   b. Take a known distance - 500 ft. - sight to a distant point and project number of times the known distance to the point.
   c. Students choose a long stretch of road in their neighborhood. Estimate ½ or 1 mile traveled from one point to another. Ride the route again with their parents or on school bus and measure the distance from the vehicle odometer.
   d. Students that walk to catch the bus, pace their route and figure the distance they walk in miles. After having done this, ask their parents to measure the distance with the car.
   e. Take other known distances: 20 ft.-50 ft. - 100 ft. - 200 ft. Practice judging these distances then take unmeasured sites, estimate, then measure for accuracy.
7. Judging distance in moving vehicles and determining required distances to stop at various speeds - 30, 40, 50, 60, 70, 80 miles per hour.
8. Have State Police demonstrate stopping distances of cars at various speeds.

Evaluation Procedures:

1. Record of students' estimates as a final test.
2. Administer rating scale.
3. Brief teacher written narrative.

ESTIMATING AND MEASURING DISTANCES

RESOURCES

Resource Materials:

1. Measuring tape - 100 ft.
2. Yardstick for measuring pace.
3. Driver manuals.

Stanford Library:

Linn, Charles, Estimations, Thomas Crowell Company, New York, 1970

Bendick, Jeanne, Measuring, Franklin Watts, Inc., New York, 1971

ESTIMATING AND MEASURING DISTANCES

- Rating Scale -

Below are statements concerning our activities of measuring and estimating distances. Please circle the number that best expresses how well you liked what we did. The numbers are:

1 - Hated it
2 - Disliked it
3 - Fair
4 - Good
5 - Great

1. Pacing distances. 1 2 3 4 5
2. Measuring distances. 1 2 3 4 5
3. Measuring an acre. 1 2 3 4 5
4. Estimating distances by sight. 1 2 3 4 5
5. Checking distances on car odometer. 1 2 3 4 5
6. Figuring stopping distances of moving vehicles. 1 2 3 4 5
7. Demonstration by state police. 1 2 3 4 5

OLD HOMES AND HOMESITES OF THE 1800'S

Unit 25

Grade Levels: 6, 7, and 8

Content Areas: Social Studies
Language Arts

Concepts:

1. Homes reflect the cultural life of the community.
2. Homes reflect the economic status of people.
3. Changing times have brought about changes in home designs and functions.

Performance Objectives:

By the end of the session, participating students will:

1. Comprehend aspects of old homes of the 1800's as designated in the listed activities, and measured by student diaries with 75% meeting standards specified by the teacher.
2. Respond with a minimum score of 3.0 on a 5.0 rating scale.

Activities:

1. Visit old homes in Lincoln County.
2. Investigate reasons for homes being in their locations.
3. Identify materials used in early homes in this area.
4. Investigate methods of communication with each other and the outside world.
5. Observe and investigate types of construction of buildings, furniture, chimneys, etc.
6. Note interesting characteristics and space utilization inside the houses.
7. Observe and note appliances and equipment used in those days.
8. Study and note sources of water.
9. Observe and compare methods of heating.
10. Show pictures of old homes and homesites before and after visits.
11. Discuss history of selected old interesting homes.

Discussion:

1. What was the purpose of picking a particular site to build their home?
2. What kind of material was used in building homes in this area?
3. Why were these materials used?
4. What determined the pattern of architecture followed in building these homes?
5. As a rule these homes were large and spacious. Why?
6. What human needs were served by the huge fireplaces?
7. What bearing did the methods of transportation have upon the locations and styles of homes?

Evaluation Procedures:

1. Evaluate student diaries.
2. Administer rating scale.
3. Teacher brief written narrative.

OLD HOMES AND HOMESITES OF 1800'S

RESOURCES

Stanford Library:

Dunn, Shirley, Historic Homes and Old Buildings of Lincoln County

Dunn, Mrs. M.H., ed., Early Lincoln County History

Hiller, Carl, From Teepees to Towers, Little, Brown and Company, Boston, 1967

Resources - Additional:

1. Ephraim McDowell Home.
2. Shakertown.
3. William Whitney House.

HOMES AND HOMESITES OF THE 1800'S

- Rating Scale -

Below are statements concerning our study of old homes. Please circle the number that best relects how you feel about each statement. The representative numbers are:

1 - Disliked
2 - Poor
3 - Fair
4 - Good
5 - Great

1. Visiting old homes. 1 2 3 4 5
2. Determining materials used in home building in those days. 1 2 3 4 5
3. Seeing and finding out about appliances and equipment used. 1 2 3 4 5
4. Viewing pictures of old homes. 1 2 3 4 5
5. Discussion sessions on history of old homes. 1 2 3 4 5
6. Keeping a diary of your experiences. 1 2 3 4 5

TREE TALK

Unit 26

Grade Levels: 6,7,8

Content Areas: Language Arts (Math, Science and Art have possibilities)

Concepts:

1. Trees experience life, growth, reproduction and death.
2. Trees have purpose and value in every society.
3. Trees have aesthetic value.

Performance Objectives:

1. Students participating in the tree study activity will apply Descriptive Writing skills by a written short story about their tree.
2. At the end of the session, participating students will respond positively to the tree study experience by scoring a minimum of 3.0 on a 5.0 attitude scale.

Activities:

1. Visit a local wooded area.
2. Each student will select his own tree.
3. Each student will ask tree questions (as an interview would be conducted, aloud).
4. The student will record his imaginative answer.
5. Each student will feel the texture of his tree's bark, smell and/or taste a leaf.
6. The students may make a rubbing of the bark and leaf of his tree for display.
7. After returning to the classroom, a short story will be written about the life of his tree.
8. In the classroom choose teams. Let one pretend he is the tree being interviewed and the other being the interviewer and re-enact their experiences.
9. Enclose some tree branches and leaves in a plastic bag. Put a rubber band around bag opening. Leave for 24 hours and check the transpiration (water content in the bag).

Discussion:

1. How many students mentioned that their tree would be used for a wood product?
2. How many wrote about their tree having some historical significance?
3. How many students indicated that their tree had "feelings"?
4. How many students could identify the kind of tree he wrote about?
5. How many estimated the age of his tree?
6. How many wrote about the value of their tree in preventing erosion, producing oxygen, etc.?

Materials:

1. Pencil and pad
2. Plain white paper for rubbing
3. Charcoal, crayon or ink (hair spray for charcoal)
4. Plastic bag and rubber band

Resources:

1. Wooded area
2. Books about trees

Evaluation:

1. The teacher will read and evaluate the short stories written by the students and retain copies.
2. Administer the rating scale.

TREE TALK

RESOUCES

Books:

Hutchins, Rose E., This Is a Leaf, Dodd, Mead, and Company, New York, 1962

Lemmon, Robert, Junior Science Book of Trees, Garrard Press, Champaign, Ill., 1960

Coe, Coffey, How and Why Wonder Book of Trees, Grosset and Dunlap, New York, 1964

Zim, Herbert and Martin, Alexander, Trees, Golden Press, 1956

MacBean and others, Trees, Examining Your Environment Series, Winston Press, Minneapllis, Minn., 1962

Stanford Library:

Fenton, Carroll Land and Pallas, Dorothy Constance, Trees and Their World, E.M. Hale and Company, Eau Claire, Wisconsin, 1957

White, Florence M., Your Friend, The Tree, Alfred A. Knopf, New York, 1969

Dudley, Ruth H., Our American Trees, Thomas Y. Crowell Company, New York, 1956

Sound Filmstrips:

Forest [illegible] Today

Picture-Story Study Sets: Broadleaf Tree

Vertical File: Forestry

Magazine: Earth-keeping "Why You Must Teach It"

TREE TALK

- Rating Scale -

Below are some questions about our "talk with the trees". Circle the number that best tells your feelings about this outing. The numbers from 1-5 are as follows:

1 - I hated it
2 - I thought it was a waste of time
3 - It was okay
4 - I liked it
5 - It was great

1. Was our visit to the wood interesting to you? 1 2 3 4 5

2. Was your interview with a tree interesting? 1 2 3 4 5

3. Did you like doing the rubbings? 1 2 3 4 5

4. Did you like writing your story? 1 2 3 4 5

Write briefly what you liked most about what we did:

SAVING OUR SOIL

Unit 27

Grade Levels: 6-8

Content Areas: Social Studies
Science
Art
Language Arts
Music

Concepts:

1. Soil can be found on different layers.
2. Soil contains many different particles.
3. Different soils support different types of plant life.
4. Soils can be eroded by various ways.
5. The soil is a major resource of factories, people, plants, etc.
6. There are ways to prevent erosion.
7. The types of land you have effects the type life you live.
8. It is important to save our soil for economical and biological reasons.

Performance Objectives:

1. Students involved in the study of conserving our soil will comprehend understandings of the importance of soil and methods to save it by personal collections of pictures to illustrate uses of soil and abuses of it, drawings of things from the soil, a collection of soils and class comments on them, and a short essay on why soil is important to us and what can be done to preserve it.
2. By the end of the session students will show a positive response to the activity with an overall composite score of 3.0 on a 5.0 attitude scale.

Activities:

1. Students will tour and observe soil erosion on our school yard. They will observe and write down the color of the soil amount of rock, plant life, and ditches present.
2. Soil profiles will be observed outdoors and pictures drawn in class of soil profiles.
3. The film "Soil and It's Uses", will be viewed.
4. Pictures or drawings of different types of land which have been eroded will be brought in for the bulletin board.
5. Students will divide into groups to prepare reports on erosion by wind, water, weather and man made erosion.
6. Students will take part in preventing erosion by planting trees, bushes on hillsides and filling in gullies.
7. Soil samples will be taken for ph value and the type plant life observed in different ph soils
8. Fertilizer maybe put on soil to change ph value. Tests will be run to see if ph value is changed.
9. Students will view slides on soil conservation from S.C.S. office.
10. A water sample of dirt to show humus, clay, etc. constructed.
11. Visit areas showing different uses of land - a farm, garbage dump, etc.
12. Films on strip mining may be shown.

13. Experiment on wet soil and dry soil to show how wind effects both.
14. Construction of map that shows what type soil and crops grown in Lincoln County.

Discussion:

1. Why are there large gullies on the hillside?
2. What caused the gullies?
3. What color of soil did you find around the gullies?
4. What type plant life did you find in the school yard?
5. Does dry soil blow away faster than wet soil?
6. Why does the highway department plant trees, vines, etc. along the road?
7. Discussion of films, pictures, etc.
8. What can we do to cut down on water, wind, and man-made erosion.
9. What was the ph value of the soil with plant growth?
10. What was the ph value of soil without plants.
11. How can we improve the soil fertility?
12. What are some good farming methods to save soil?
13. How much corn do you get to an acre? Could you get more? How?

Materials:

1. School yard map
2. Pencils, papers
3. Small jars or pill bottles
4. Shoe box of soil
5. Seedlings, plants, vines, grass, etc. used to plant in gullies
6. Rotten logs and rocks for fill in
7. Scissors
8. Soil testing kits.
9. Fertilizers.

Resources:

1. Soil Conservation Service.
2. Department of Interior, Washington, D.C.
3. Department of Agriculture, Washington,D.C.
4. Bureau of Mining, Frankfort, Kentucky
5. Environmental Protection Agency, Washington, D.C.
6. Vertical File
7. Government Publications
8. Films: Science
    a. "Our Earth: Land, Water and Air" - Sound filmstrip
    b. "Forest Conservation Today" - Sound filmstrip
    c. "Conservation, Your Stake in the Future" C 3 0
    d. "Kentucky: It's Geog and Resources" D 4 9
    e. "Soil and It's Uses" E 3
    f. "The Earth: A Great Storehouse" E 9
    g. "The Importance of Soil Conservation" E 10
    h. "Mexico: Our Southern Neighbor" C 4
    i. "The Top of the World" C 22
    j. "Republic of the Phillippines" C 23
    k. "South America" C 21
    l. "Mountain Villages of Ecuador" C 42

Evaluation:

1. Maintaining drawing, collections of pictures and essays.
2. Administer rating scale.

SAVING OUR SOIL

RESOURCES

Books:

Gates, Richard, The True Book of Conservation, Children's Press, 1959 3-4

Forth, Henry and Jacobs, Hyde S., Field Guide to Soils, Houghton, Mifflin Company, Boston, 1971

Cooper, Elizabeth, Science in Your Own Backyard, Harcourt, Brace and World, Inc., New York, 1958

Stanford Library:

Allen, Shirley and Leonard, Justin Wilkinson, Justice, Conserving Natural Resources, MacGraw-Hill Book Company, New York, 1966

SAVING OUR SOIL

- Rating Scale -

Below are some questions about our study of the soil. Please circle the number that best tells your feelings. The numbers are 1-5 and are as follows:

1 - Hated it
2 - Not too good
3 - Fair
4 - Good
5 - Great

1. Did the study and outdoor observation of soil in our school yard interest you? 1 2 3 4 5
2. Did you enjoy the art work? 1 2 3 4 5
3. Did you like planting trees, etc.? 1 2 3 4 5
4. Did you enjoy filling in the gullies with rocks, sticks, etc.? 1 2 3 4 5
5. How did you feel about the group activities? 1 2 3 4 5
6. How did you feel about preparing displays, models, or bulletin boards? 1 2 3 4 5
7. How did you feel about the experiments in this study? 1 2 3 4 5
8. Did you enjoy the visits to different places showing how soil is used? 1 2 3 4 5
9. What are your feelings toward the filmstrips used in this study? 1 2 3 4 5
10. How would you rate the speakers? 1 2 3 4 5

Total the numbers you have circled and divide by 10. Put you answer on the blank provided. ________
(Space for adding and dividing):

If there was a certain activity which you felt provided a poor learning experience, write a short paragraph on what you think should be changed, or suggest another activity which would be more informative about soil.

FRONTIER FAMILY LIFE

Unit 28

Grade Levels: 6,7,8

Content Area: Social Studies

Concepts:

1. Leisure time was limited to the frontier family.
2. Some forms of justice were cruel during pioneer living.
3. The way of life in pioneer days was to have large families.
4. Pioneer families depended upon their resources.
5. The ways of transportation were unsophisticated and very elementary.
6. Because of restricted social life, togetherness of families was apparent.
7. Pioneers had limited formal education.
8. Their form of entertainment was limited and often self developed.

Performance Objectives:

By the end of their study, participating students will:

1. Comprehend pioneer family life styles by scoring a minimum of 75% on a teacher made test.
2. Respond favorably to the unit on Frontier Family Life by scoring a minimum of 3.0 on a 5.0 attitude scale.

Activities:

1. Divide room into equal groups and assign topic to each one:
   a. Leisure time
   b. Punishments by law and at home
   c. Transportation
   d. Social life and entertainment
   e. Poor education
2. Give each group time to throughly discuss each topic, compare with present time, ask questions, make comments, etc.
3. Make calendar and write in details what a given pioneer family of eight or nine would do during one week. Include time, weather, who participates, how long spent doing each, what they wear, etc. Include all topics discussed.
4. Identify poor practices of conservation of natural resources in pioneer days. Explore why these practices were of little concern in that period of time. Relate to necessities for improved practiced today.
5. Visit Harvey Helm Historical Library.
6. Visit William Whitney House.

Discussion:

1. Why was their formal education limited?
2. Why they didn't have church each Sunday?
3. Why did men stay in jail so long before they were tried?
4. Why was leisure time limited?
5. Why did families take their children to see hangings?

6. What would have been the effect on pioneer families if the wheel hadn't been invented?
   a. Horse stealing
   b. Ways of life would have been much slower
7. Why was leisure time limited to the pioneer family?
8. Why did pioneer families have to depend upon their resources?
9. Why the need for a large family?

Resources:

1. Visit to Harvey Helm Historical Library.
2. Visit to William Whitney House.
3. Books on early transportation, education, punishment, social life.

Evaluation Procedures:

1. Essay test.
2. Attitude scale.
3. Teacher narrative evaluation.

FRONTIER FAMILY LIFE

RESOURCES

Stanford Library:

Farquhar, Margaret C., Colonial Life in America, Holt, Rinehart and Winston, New York, 1962

Highland Library:

Fowler, Mary Jane, Colonial America, Fideler Company, Grand Rapids, Michigan, 1960

Tunis, Edwin, Colonial Living, World Publishing Company, Cleveland, Ohio, 1957

McCall, Edith, Pioneering On The Plains, Children's Press, Chicago, 1962

Records:

America On The Move

The Song of America, a musical saga of our country's founding

Vertical File:

Pioneer Life

Magazine Articles:

Pioneer Wisdom: Preserving the Past

FRONTIER FAMILY LIFE

- Rating Scale -

Below are some questions about our study of pioneer life. Please circle the number that best expresses how you feel about each question.

1 - Disliked
2 - Poor
3 - Fair
4 - Good
5 - Excellent

1. How did you like discussion groups?	1 2 3 4 5
2. How did you like trip to library?	1 2 3 4 5
3. Did pioneer life interest you?	1 2 3 4 5
4. Did you like making the calendar?	1 2 3 4 5
5. Did you think the books were interesting?	1 2 3 4 5

DO IT YOURSELF COMMUNITY

Unit 29

Grade Level: 8

Content Area: Language Arts

Concepts:

1. To debate an issue basic factual information must be known.
2. Systematic procedure must be developed in debating, letter writing, radio and T.V. spot announcements, producing new releases, etc.
3. The following skills are effective attributes to good oral presentation:
   a. Voice
   b. Eye contact
   c. Stance
   d. Persuasiveness

Performance Objectives:

During the sessions on Do It Yourself Community, participating students will:

1. Apply writing skills by developing business letters, news articles, slogans, and T.V. and radio announcements satisfactory to standards established by the teacher and retention of those student products.
2. Apply speaking skills by participating in debates and presenting timed speeches to be judged by student audience and the classroom teachers on the criteria stated in concept #3.
3. At the end of the session, participating students will respond positively to the "Community" game experience by scoring a minimum of 3.0 on a 5.0 attitude scale.

Activities:

1. Students will select various issues and hold a debate.
2. Students prepare letters to various committees, commissions, government agencies, etc., taking stands and making recommendations on various community developments.
3. Students prepare oral presentations pretending they are appearing before citizens groups, planning and zoning, and other government and community agencies.
4. Prepare radio and T.V. spot announcements.
5. Prepare newspaper releases.
6. Student analyze other students' reports, letters, etc. to detect factial information or propogandizing.
7. Simulated community development and planning utilizing"Ecology" game.

Discussion:

1. Did students use factual information in debating?
2. Did students use constructive criticism while evaluating speeches of fellow students?
3. Could students detect propoganda or use propoganda in slogans and speeches?

Materials:

1. Coca-Cola Ecology game.
2. Tape recorder.
3. Poster paper, magic markers.
4. Pencils and paper.

Resources:

1. English hand book.
2. Science hand book.
3. Filmstrips on the environment.

Evaluation Procedures:

1. The teacher will read and evaluate the business letters written by the students. (Retain copies)
2. The students hand in an evaluation sheet for each speaker, judging the four skills.
3. The teacher will judge each speech.
4. The T.V. and radio spots will be judged by the students' reaction to the "spot".
5. Administer the rating scale.

DO IT YOURSELF COMMUNITY

- Rating Scale -

Below are some questions about our Planned Community. Circle the number that best tells your feelings about this game. The numbers from 1-5 are as follows:

1 - Hated it
2 - Thought it was a waste of time
3 - Okay
4 - Liked it
5 - Great

1. Was the planning of a community interesting? 1 2 3 4 5

2. Did you like debating? 1 2 3 4 5

3. Did you like writing your business letter? 1 2 3 4 5

4. Did you like judging the speeches? 1 2 3 4 5

5. Did you like doing a radio or T.V. news spot? 1 2 3 4 5

6. Did you like giving your speech? 1 2 3 4 5

Write briefly what you liked most about what you did:

ADDITIONAL TEACHER REFERENCES

Jackson, Wes, *Man and the Environment*, William C. Brown Co., Publishers, Dubuque, Iowa, 1971

Mand, Charles, *Outdoor Education*, Charles E. Merrill, Publishing Co., Columbus, Ohio

Bushsbaum, Ralph and Mildred, *Basic Ecology*, Boxwood Press, Pittsburg 13, Pa., 1957

Kodak Customer Service Pamphlet, *Improve Your Environment - Fight Pollution With Pictures*, Rochester, New York 14650

Brehm, Shirley A., *A Teachers' Handbook For Study Outside the Classroom*, Charles E. Merrill, Publishing Co., Columbus, Ohio, 1969

Do-It-Yourself Environmental Handbook, prepared by Dayton Museum of Natural History, Little, Brown and Company, Boston, 1971

Carson, Rachel, *Sense of Wonder*, Harper and Row, New York, 1956

Cooper, Elizabeth, *Science In Your Own Backyard*, Harcourt, Brace and World, Inc., New York, 1958

Musselman, Virginia, *Learning About Nature Through Crafts*, Stackpole Books, Harrisburg, Pa., 1969

Musselman, Virginia, *Learning About Nature Through Games*, Stackpole Books, Harrisburg, Pa., 1967

DeBell, Garrett, Ed., *The Environmental Handbook*, Ballantine Books, New York, 1970

Kjellstrom, Bjorn, *Be Expert With Map and Compass*, Charles Scribner's Sons, New York, 1967

Allen, Shirley and Leonard Justin, Wilinson, Justice, *Conserving Natural Resources*, McGraw Hill Book Company, New York, 1966

Milliken, Margaret and others, *Field Study Manual For Outdoor Learning*, Burgess Publ., Company, Minneapolis, Minn., 1968

Needham, Dorothy, *Pollution: A Handbook for Teachers*, Scholastic Book Services, New York, 1971

ADDITIONAL REFERENCES

Stanford Library:

Case, Marshall T., Look What I Found, Chatham Press, Inc., Riverside, Conn., 1971 (Young Conservationalists Guide to the Care and Feeding of Small Wildlife)

Hogner, Dorothy, Childs, Earthworms, Thomas Crowell Company, New York, 1953 K-5

Waters, John, Neighborhood Puddle, Frederick Warne and Company, Inc., New York, 1971

Silberstein, Alvin and Virginia, A World In a Drop of Water, Athenum, New York, 1969 5-8

Schwartz, George, Life In a Drop of Water, Natural History Press, Garden City, New York, 1970 8-12

Hilton, Suzanne, How Do They Get Rid of It? Westminister Press, Philadelphia, 1970 7 and up

Shomon, Joseph, Wildlife Habitat Improvement, National Audubon Society, New York, 1966

Gilleland, G. Howard, The Young Sportmans' Guide to Photography, Thomas Crowell and Sons, New York, 1964

Hudlow, Jean, Eric Plants a Garden, Albert Whitman and Company, Chicago, 1971

Fisher, Aileen, Feathered Ones and Furry, Thomas Crowell Company, New York, 1971

RESOURCE MATERIALS

Earthcorp Study Programs Grades 1-2 We Need Each Other
Grades 3-4 Earth Is My Home
Grades 5-6 Sharing The Earth
Scholastic, 904 Sylvan Avenue, Englewood Cliffs, New Jersey 07632

National Audiovisual Center, Washington, D.C. 20409

Tennessee Valley Authority, M.E. Veasey, Golden Pond, Kentucky
- Bibliography of Environmental Education, prepared by Mass. Audubon Society
- Selected References for Field Experience Laboratory Development and Curriculum Related Activities
- Selected Reference for Environmental Education
- Film Services

"Dash McTrash and the Pollution Solution: Learning to Care About Ecology" (K-3) 5 filmstrips
Spoken Arts, Inc., 310 N. Avenue, New Rochelle, New York 10801

State Department of Education, Frankfort, Kentucky 40601
- Bibliography for Environmental Education
- Film Listing
- Unit: Pollution - Its' Effect On My Community

Booklets of Air Pollution and Cars, "Professor Clean Asks...What Is Air Pollution?", General Motors Corp.

Ecology Program
BFA Educational Media, 2211 Michigan Avenue, Santa Monica, California 90404

National Wildlife Federation, 1412 16th Street, N.W., Washington, D.C.
Many Good Materials

U.S. Dept. of Agriculture, Agricultural Research Service, Federal Center Building, Hyattsville, Maryland 20782

ESSENSE Program
Earth Science Teacher Preparation Project, Box 1559, Boulder, Colorado 80302

Boy Scouts of America, Supply Division, 1930 N. Mannheim Road, Melrose Park, Illinois 60160
Good Materials

KET - Educational T.V.

U.S. Dept. of the Interior, Office of the Secretary, Washington, D.C., 20204, pamphlets, films, books.

Use Instructor, Grade Teacher and Teacher magazines. They have excellent articles and also units.

JOHN ADAIR ELEMENTARY
Grades 5 - 8

ENVIRONMENTAL EDUCATION

CURRICULUM GUIDE

EXPERIMENTAL DRAFT

John Adair Elementary
Grades 5 - 8

ESEA Title III
Region V
Tradewind Center
Somerset, Kentucky 42501
July 1973

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PREFACE

This curriculum guide is an experimental first draft to be pilot tested and modified during the 1973-74 school year. After pilot testing of the curricular activities and validation of evaluation instruments, the revised guides will be available to other schools.

The student activities in this curriculum guide should be developed with the following three part sequence.

Exploration -- This is a showing experience. Let students view pictures, films, actual environment relative to the concept being taught. Students investigate, read, etc.

Discussion -- Questions should be directed to students to assist them to expand their observations and awareness about their exploratory experiences. Students should be afforded the opportunity to share and discuss their experiences.

Application -- The application of the concepts should be utilized in the discipline areas. This type activity should lead to drawing conclusions, making decisions, problem solving. Application in the final activities that reinforce all others should produce tangible results of the students' efforts.

Each of the three above types of activities should be developed, incorporating as many as possible of the following experiences in priority order, with highest priority commencing with a and continuing through f.

a. Direct experience-- An experience where the student is allowed to be an active participant.

b. Simulated experience-- Where the student uses imagination, such as role playing, pretending-simulation games, dramatization, etc.

c. Audio-visual experience-- Use of sound films, filmstrips with recorded scripts, television, etc.

d. Visual experience-- Identification of the concept by sight using pictures, filmstrips, etc.

e. Audio experience-- The formation of mental images based on sound; use of records, tape recording and sometimes radio can be utilized.

f. Abstract experience-- Consists of teacher explanation, lectures, etc.

ART AND THE ENVIRONMENT

Unit 1

Grade Level: EMH
Adaptable to 1-8

Content Areas: Art
Science
Home Economics
Language Development

Concepts:

1. Natural objects can be combined or rearranged to enhance their beauty.
2. We can develop our powers of observation.
3. Things in nature that seem to be worthless can be made into items of economic value.

Performance Objectives:

By the conclusion of the activities on Art and the environment, all participating students will:

1. Apply skills creating decorative and useful products from natural materials as measured by each childs' completion of at least three saleable products.
2. Respond favorably to the art and craft activities with 75% positive statements as measured by their individual verbal responses recorded on an audio tape.

Activities:

1. Field trips:
    a. To craft shows.
    b. To wet area to gather materials.
    c. To wooded area to gather materials.
    d. To open field to collect items.
2. Have resource persons come to class to demonstrate various crafts or hobbies:
    a. Art teacher.
    b. Home maker.
    c. Older person from community.
3. Make lists of materials required for constructing various items.
4. Make sketches of items to be made.
5. Sort, classify, label and store materials.
6. Make collage of wood, weeds, pods, and flowers.
7. Make desk lighters using rocks.
8. Make seed and nut jewelry.
9. Make shell jewelry, paperweights, etc.
10. Make Christmas decorations (wreaths, ornaments).
11. Use natural dyes to make batiques.
12. Make decorative plaques from collected nature items.
13. Weave items using stems, leaves, and twigs.

14. Evaluate finished objects, attach price and plan display.
15. Plan a continuing flea market for EMH class to be conducted by EMH students.
16. View filmstrips.
17. Collect pictures of crafts and diagrams for making.
18. Make list of things to look for in trips.

Discussion:

1. Where can we look for seed pods? Cones? Shells: Interesting rocks? Nuts? Driftwood? Cattails? Willows? Weeds? Grasses? Flowers?
2. What shall we collect on this field trip?
3. Where shall we store our items?
4. When we go into an area for collecting items how can we avoid harming plant life and wild life?
5. Who do you think might tell us about basket weaving? (Other activities)
6. What do we need to purchase to complete a project?
7. What can we make from (name various specific item)?

Materials Needed:

1. Containers for collecting various items.
2. Boxes to make into stack type storage bins.
3. Electric drill, glue, shellac, bleach, containers for soaking, spray paints, plywood, small saw, sandpaper, dry markers,pencils, paper, wire (small guages),items collected from environment.

Resources:

1. County demonstration agent, art teacher, areas for gathering various materials.
2. Books:
   Bale, R.O., Creative Nature Crafts, Burgess Publishing Co, Minneapolis, 1959
   Musselman, Virginia W., Learning About Nature Through Crafts, Stackpole Books, Harrisburg, Pa., 1969
   Adrosko, Rita J., Natural Dyes and Home Dyeing, Dover Publishing Co., New York, 1971
   Hawkinson, John, Collect, Print and Paint From Nature, Albert Whitman and Company, Chicago, 1967

Evaluation Procedures:

1. Teacher and student evaluation of finished products.
2. Recordings of pupil responses.

BUILDING AND MAINTAINING A COLD FRAME

Unit 2

Grade Level: 4-6, also adaptable for EMH

Content Areas:
Math
Science
Art
Language Arts

Concepts:

1. Mathematics - addition, subtraction, multiplication, division, fractions, time and measurement.
2. Temperature can be naturally regulated.
3. Moving air has a cooling effect.
4. Soil quality and texture influence plant growth.
5. Plants must have moisture, light and heat to grow.

Performance Objectives:

The participating students will, upon completion of the activities relative to the building of a cold frame:

1. Apply skills of how temperature, soil, and moisture can be regulated to provide a more favorable condition for germination and growth of seed plants as demonstrated by making and using cold frames.
2. Respond positively to the development of cold frames by scoring a minimum of 3.0 on a 5.0 rating scale.

Activities:

1. Visit a greenhouse - observe plants in varying stages of growth: Observe seeds, cuttings, bulbs and rhizomes.
2. View filmstrips.
3. Find pictures in science books.
4. Bring in soil samples in cans.
5. Purchase seed and lumber.
6. Plant seeds in cans of (1) sand, (2) clay, and (3) loam, observe results.
7. Make sketches of cold frames.
8. Draw scale model.
9. Draw and label planting chart.
10. Measure and saw lumber.
11. Construct cold frame.
12. Mix soil.
13. Plant seed and cover frame.
14. Record cost of materials, hours of labor, and dates of planting, germination and growth.

Discussion:

1. What shall we see at the greenhouse?
2. How shall we conduct ourselves on our trip?
3. Why were the men mixing soil from various sources?
4. Why did they add sand?
5. What types of seed did we see?
6. How do bulbs differ from rhizomes?
7. Of what benefit are plants to mankind? To all animals?
8. What do we need for measuring and cutting lumber?
9. Why do we build one side of the frame higher than the other?
10. Which direction shall we have the frame face - east, west, south, north?
11. What seeds will be suitable to put in the cold frame?
12. What environmental factors will influence our choice of a planting time?

Materials Needed:

1. Pencils and paper.
2. Nurseryman, farmer or gardener.
3. Filmstrips, books and catalogues.

Evaluation Procedures:

1. Teachers and students written evaluation.

Resources:

1. Books:
   Femal, Jerome T., Children's Gardening, Bulletin #69, National Recreation and Park Association, 1967
   Koehler, Cynthia and Alvin, Indoor and Outdoor Gardening for Young People, Grosset and Dunlap, 1969
   Hancock, J.E., The School Garden
   Seymour, E.L.D., New Garden Encyclopedia
2. Filmstrips:
   Seasons of the Year
   How Plants Help Us
   How Plants Start Growing
   Let's Explore a Garden
   Plants Are Living Things
   The Calendar, Time and Temperature
   Understanding Units of Measurement
   How Light Helps Us
   Energy From the Sun

BUILDING AND MAINTAINING A COLD FRAME

- Rating Scale -

Below are some questions about the preparation of a cold frame. Please circle the number that best tells your feelings. The numbers from 1-5 are as follows:

1 - Hated it
2 - Not too good
3 - Fair
4 - Good
5 - Great

1. Did you enjoy our visit to the greenhouse? 1 2 3 4 5

2. Did you find planting and observing growth of seeds in the three types of soil interesting? 1 2 3 4 5

3. Did you like keeping records? 1 2 3 4 5

4. Do you like to plant seeds? 1 2 3 4 5

5. Do you wish to transplant our plants to your garden? 1 2 3 4 5

CONTRASTING AQUARIUMS

Unit 3

Grade Level: EMH

Content Areas: Math
Science
Health
Language Arts

Concepts:

1. Pints, quarts, and gallons are units of liquid measure.
2. Cleanliness, food and air are essential to health.
3. Sanitary conditions for fish are as necessary for healthful life as it is for people.
4. Water in a tank can be kept clean and clear by use of a filter but evaporated water must be replaced by declorinated water.
5. Maintaining sanitary conditions in an aquarium costs money as does maintaining sanitary conditions for people in the home.

Performance Objectives:

By the end of the study of contrasting aquariums, participating students will:

1. Develop a basic knowledge of the importance of maintaining sanitary conditions comensurate with each childs proficiency level as judged by the teacher through student letters and oral reports and maintaining records of students performance.
2. Respond with positive enthusiasm as determined by each individuals brief verbal reactions recorded on an audio tape.

Activities:

1. Use plastic containers for measuring liquid.
2. View filmstrips of fish and water life.
3. Collect pictures of various fish.
4. Visit a pet shop, observe various fish, aquarium sizes, filters, ariators, food, etc.
5. Purchase aquarium with filter and other equipment, record all prices. Purchase second aquarium of identical size, record price. Purchase fish.
6. Establish aquarium with equipment, establish other aquarium.
7. Keep individual records of time, cost etc. for each aquarium.
8. Make up committees for caring for each aquarium. (Take proper care of first aquarium. Let other sit, get dirty and fish die.)
9. Some children will be able to write stories about trip to pet shop.

Discussion:

1. How can we find out how many of the smaller containers will fill the large container.
2. How do the fish breathe?
3. Can they live out of water?
4. What kind of home does a fish need?
5. Does he need clean water?

6. How can we keep the water in the aquarium clean?
7. What would happen to the fish if the aquarium was not kept clean?
8. How can we find out? Can we set up two aquarium?
9. Will it cost more to establish an aquarium which provides for sanitation?
10. How can we tell if it is cheaper in the long run to set up the aquarium with the more costly equipment?
11. How many fish can we place in the aquarium if we allow one gallon of water for each inch of the fishs' body?
12. What causes the water in the second aquarium to look different? Smell different?
13. Why does the other aquarium still look and smell fresh?
14. What is wrong with the fish in the foul aquarium?
15. What caused this?
16. Could we possibly take them out, clean thing up and save their lives?
17. Do you thin people need clean food, water, and living quarters to stay well and strong?
18. Should we take good care of our homes?
19. Does it cost more to provide sanitation in the home?
20. If we get sick from filth and impurities and have to buy medicine, pay a doctor bill, or miss school or work, do you think it might be cheaper to spend the money on keeping things clean?

Materials Needed:

1. Filmstrips, books, paper, pencils, plastic cartons, money for purchases.

Resources:

1. Library books:
   Payson, Klaus, Aquarium Fish from Around the World, Lerner, 1970
   Cooper,Elizabeth, Science on the Shores and Banks, Harcourt Brace and World, 1970
   Hillcourt, The New Field Book of Nature Activities, G.P. Putnam's Sons, New York, 1970
   Zairchy, Harry, Here's Your Hobby, Knopf, 1950
2. Material center.
3. Pet shop.

Evaluation Procedures:

1. Members of the most advanced group will write a letter to a friend telling about the two aquariums.
2. More limited members will tell an invited guest all the things he remembers about establishing and maintaining the two aquariums. Teacher will evaluate both letters and oral reports.

EVERGREEN TREES

Unit 4

Grade Level: 4-5

Content Areas:
Language Arts
Science
Math
Art

Concepts:

1. There are many uses of evergreens.
2. There are many types of evergreens.
3. Trees have aesthetic value in landscaping.
4. Evergreens reveal types of soil.
5. Evergreens reveal industrial economy or type of business of an area.

Performance Objectives:

By the end of the session, participating students will:

1. Respond to the study of evergreens with a composite score of 2.0 or better on a 3.0 rating scale and narrative paragraph of what they liked best.
2. Have a knowledge of:
    a. Evergreen user
    b. Types of evergreens
    c. Types of business

    as demonstrated through their oral reports and discussions as judged by the teachers' observation, and comprehend skills of landscaping as demonstrated by producing a landscape drawing to scale.

Activities:

1. Take the children to visit a forest and a nursery.
2. Show films and filmstrips on evergreens.
3. Read books and articles on evergreens and landscaping.
4. Draw a lawn and landscaping to scale.
5. Draw pictures of different evergreens and products derived from them.
6. Collect samples of needles and cones.
7. Make collages using needles and cones pasted on to paper.
8. Promote oral reports and panel discussions.
9. Forest ranger present program on evergreen forests, uses and impact on local occupations.

Discussion:

1. What evergreens are used in landscaping?
2. What evergreens are used for screens?
3. What types of evergreens are used for lumber?
4. What types of evergreens are used for furniture?
5. What other products do we get from evergreens?
6. What is the cost of landscaping?
7. What are other uses of evergreens?
8. How do evergreens reproduce?

Resources:

1. Nurserymen, forest ranger, carpenter, furniture maker, saw mill operator.
2. Books:
   Cormack, M.B., The First Books of Trees, Watts, 1951
   Matthews, F. Schuyler, Field Book of American Trees and Shrubs, Putnam, 1915
   Lemmon, Robert S., Junior Science Book of Trees, Garrard, 1960
   Milue, Margery and Lorus J., Because of a Tree, Atheneum, 1963
   Hutchins, This is a Tree, Dodd, Mead, 1964
   Zim and Martin, Trees - A Guide to Familiar American Trees, Golden Press, 1956
   Watts, May Theilgaard, The Doubleday First Guide to Trees, Doubleday, 1964
   Guilcher and Noailles, A Tree is Born, Sterling, 1964
3. Filmstrips:
   Our Dependence on Lumber Workers, Curriculum Films, Inc.
   Landscape and Civic Art
   Trees and More Trees
   Seeds and How They Travel

Materials Needed:

1. Paper and pencil.
2. Crayons.
3. Art paper.
4. Modeling clay.
5. Paste.

EVERGREEN TREES

- Rating Scale -

Below are listed some things we did when studying evergreens. Please circle #1 if you hated it, #2 if it was okay, or #3 if it was great.

1. Trip to the forest and nurseries. 1 2 3
2. Viewing filmstrips. 1 2 3
3. Oral discussion. 1 2 3
4. The art work. 1 2 3
5. The forest rangers' talk. 1 2 3

Write a short paragraph about what you liked best about our study of evergreens:

COMPASSING AND MAPPING

Unit 5

Grade Level: 5-6

Content Areas: Social Studies
Math
Language Arts

Concepts:

1. Maps are essential to us.
2. Compasses are important in determining direction.

Performance Objectives:

1. Within a two-week period, 75% of the participating students will be able to apply specific compass reading and mapping skills as determined by demonstrating that proficiency to the teacher.
2. By the conclusion of the exercises the participating students will respond positively to compass reading and mapping by scoring a minimum of 3.5 on a 5.0 attitude scale.

Activities:

1. Learning to read a compass.
2. How to shoot an azimuth.
3. Estimating paces.
4. Mapping with a compass.
5. Let children design compass courses and developing cards for shooting azimuth indicating degrees and paces.
6. Establish compass and map reading vocabulary from resources.
7. Have student committee to produce a video taped program on using the compass.

Reading the Compass:

The compass has four cardinal points: North, South, East, West. There are 360° in the complete circle with North being 0°.

To find directions, turn the compass dial until the direction is in line with the travel arrow. Then holding compass level and directional travel arrow straight ahead, turn body until magnetic needle points to North. Then turn the compass dial until the needle points to North.

Select a small committee of students to review the resources available on how to use a compass.

Procedural Activities:

1. Select a committee of 4 to 6 capable student leaders to review the resources on compass reading and mapping.
2. When these students have developed the capability of performing the activity skills designate them as leaders of sub-groups of the class.

3. Let these leaders demonstrate the entire process to their groups.
4. Organize the groups in pairs giving the necessary compass and other materials to carry out the activities.
5. Have students examine compasses and let them find directions.
6. Demonstrate the 360° of compass and locate the four directional points of compass (N,E,S,W).
7. Take students outside and divide in teams of two.
8. Have student measure distance using the exercises on pages 7-15 of Field Study for Outdoor Learning.

Note: This is to be used as an inquiry approach to learning allowing students to research available materials and then become leaders for groups of their peers. Students are to learn by doing and not depend on the teacher for specific instruction.

Discussion:

1. In what ways are accurate maps valuable?
2. In what ways are estimated measurements sufficient for our use?
3. Why are maps drawn on a reduced scale?

Resources:

1. Compasses
2. Pencil and paper
3. Graph paper
4. Hammett, Catherine, Your Own Book of Campcraft, Pocket Books, 1972
5. Kjellstrom, Bjorn, Be Expert With Map and Compass, Charles Scribner and Sons, New York, 1967
6. Swan, Malcomb, Tips and Tricks in Outdoor Education, Interstate Printers and Publishers, 1970
7. Milliken, Margaret, Hamer, Austin F., McDonald, Ernest C., Field Study Manual for Outdoor Learning, Burgess Publishing Company, 1968
8. Major, James M., Cissell, Charles, Environmental Education Objectives and Field Activities, ESEA Title III project, Paducah Public Schools, Paducah, Kentucky, Fourth Ed., 1971
9. Boy Scout Compass Cards.

Evaluation Procedures:

1. The teacher will select activities for students to demonstrate their proficiency and maintain an activity check list. Students not able to to perform specific activities indicated on the check list will be taught that skill by the student leader until a proficiency level is reached.
2. Administer behavior rating scale.
3. The teacher will make a brief narrative of the programs effectiveness.

Resources - Additional:

Filmstrips:

Reading Directions on Maps, Encyclopedia Britannica, 35mm FS 99

Measuring Distances on Maps, Encyclopedia Britannica, 1952 FS 100
(Copy) 1958 FS 191

Transparencies:

Map Reading - U.S.
Map Reading - World

Activity Check List:

Students name	Activity					
	1	2	3	4	5	6

1. Reading a compass.
2. Shooting an azimuth.
3. Plotting an area.
4. Drawing a map to scale.
5. Walking a compass trail.
6. Estimating a distance by pacing.

COMPASSING AND MAPPING

- Rating Scale -

Below are listed statements of things we did during our study of compassing and mapping. Circle the number by each statement that best expresses how you felt about each statement. The numbers are:

1 - Poor
2 - Fairly poor
3 - Okay
4 - Good
5 - Great

1. Learning to read a compass. 1 2 3 4 5
2. Shooting an azimuth with a compass. 1 2 3 4 5
3. Estimating distance by pacing. 1 2 3 4 5
4. Mapping with a compass. 1 2 3 4 5
5. The outside activities. 1 2 3 4 5
6. Working in teams and small groups. 1 2 3 4 5
7. Using reference materials. 1 2 3 4 5

BIRDS AND MAN HELP EACH OTHER

Unit 6

Grade Level: 5-6

Content Areas: Social Studies
Language Arts
Science
Math
Art

Concepts:

1. Birds are of value to man.
2. Birds differ in feeding habits.
3. Certain birds are native to a community.
4. Birds have special adaptations to help them survive.
5. Birds have the same basic needs as man.

Performance Objectives:

At the conclusion of the session, participating students will:

1. Respond with a positive composite score of at least 2.5 on a 4.0 point attitude checklist.
2. Apply skill identified on the activity checklist by satisfactorily completing a minimum of five of the nine activities.

Activities:

1. Read suitable material about birds.
2. Study pictures of birds and show filmstrips.
3. Go outside to watch birds in their natural habitat.
4. Make bird feeders (decorate trees for birds with food at Christmas time).
5. Identify foods different birds eat.
6. Collect natural bird foods.
7. Make bird books.
8. Observe birds regularly in feeding.
9. Record bird sounds only from record of identified birds.
10. Listen to tapes and records.
11. Imitate bird calls.
12. Write poems about birds.
13. Dramatization, pantomimes.
14. Do modeling and painting of birds from soap, bread dough, native clay, modeling clay.
15. Use ceramic clay and bake in kiln.
16. Photography - Parent with telescopic lens (if available).
17. Bird Watchers' Club outside the school.
18. Build bird houses.
19. Make bulletin board on native birds.

Discussion:

1. What birds are most frequently seen in this area?
2. In what ways are birds valuable to man?
3. In what ways do birds adapt to their surroundings?
4. What are the different types of food consumed?
5. What bearing does this have on migration?
6. Why do some birds migrate while others do not?
7. Why are the male and female of different color? Which is the more vivid?
8. What are some of the needs of birds common to man?
9. How can birds be helpful to man?
10. How has man damaged birds' environment?
11. How can man be helpful to birds?
12. How do birds' nests differ?
13. Why do some birds need more protection than others?
14. What are some shelters provided by nature?
15. How are birds named (families)?
16. What has been the result of man not knowing the value of birds?
17. Do all birds build nests?
18. How can birds fly?

Materials Needed:

1. Construction paper.
2. Unlined paper or newsprint.
3. Colored chalk, crayons, paints.
4. Modeling clay, native clay, bread dough.
5. Feeders (pie tins, ice cream cups, coffee cans).
6. Food (suet, seeds, pine cones, grain), coat hangers.
7. Shelter - lumber, nails, hammer, saw, pie tins, coffee cans, tin can, goards.
8. Binoculars.

Resources:

1. Books:
   Snedigar, Robert, Our Small Native Animal; Their Habits and Care, Dover Publication Inc., 1963
   Collins, Henry Hill Jr., What Bird Is This?, Dover Publication Inc. New York, 1961
   Peterson, Roger, How to Know the Birds, New American Library - Signet Book, 1957 (Paperback)
   Friskey, Margaret, True Book of Birds We Know, Children's Press, Chicago, 1954
   Lemmon, Robert S., All About Birds, E.M. Hale and Co., Eau Claire, Wisconsin, 1955
2. Filmstrips:
   Birds of Open Field and Meadows, Eyegate, FS 439
   Birds of Rivers, Marshes and Seashores, Eyegate, FS 440, Kit, filmstrip and record
   Smaller Birds of Woods and Gardens, Eyegate, FS 441
   Larger Birds of Field and Garden, Eyegate, FS 442, Kit, record and filmstrip

Resources, Continued:

3. Transparency:
   Birds, Macmillian, 1967

Evaluation Procedures:

1. Administer attitude checklist.
2. Maintain activity checklist.
3. Teacher narrative evaluation.

BIRDS AND MAN HELP EACH OTHER

ACTIVITIES CHECKLIST

NAME 1 2 3 4 5 6 7 8 9

1. Identify five local birds from pictures.
2. Identify five birds by the calls.
3. Make bird feeders.
4. Collect five natural foods.
5. Bird poem.
6. Part in drama or skit.
7. Model of a bird (clay, ceramic, etc.)
8. Build bird house.
9. Make bulletin board of native birds.

BIRDS AND MAN HELP EACH OTHER

- Rating Scale -

Below are listed some of the activities we did in our study of birds. Please circle the number which indicates how you feel.

1 - Not too good
2 - Fair
3 - Good
4 - Great

1. Working in groups. 1 2 3 4
2. Observing birds outside. 1 2 3 4
3. Viewing films and filmstrips. 1 2 3 4
4. Making bird feeders. 1 2 3 4
5. Collecting food. 1 2 3 4
6. Making scrapbooks. 1 2 3 4
7. Keeping records of sounds. 1 2 3 4
8. Writing poems about birds. 1 2 3 4
9. Using clay and soap in modeling birds. 1 2 3 4
10. Collecting materials on birds. 1 2 3 4
11. Making tapes of bird calls and sounds. 1 2 3 4

THE EFFECT OF WEATHER CHANGES ON PLANTS AND ANIMALS

Unit 7

Grade Level: 5-6

Content Areas: Math
Science

Concepts:

1. Weather is the condition of the atmosphere at a particular time at a particular place.
2. Weather conditions affect the activities of plants and animals.
3. Weather conditions vary from time to time.
4. Too dry weather may destroy crops and cause destructive dust storm while too much precipitation may be destructive.

Performance Objectives:

1. By the conclusion of this unit, 80% of the participating students will comprehend factors influencing weather changes as demonstrated by their completion of the weather conditions record sheet.
2. Upon completion of this unit, participating students will respond, to the listed activities, with a minimum average score of 3.0 on a 5.0 attitude scale.

Activities:

1. Visit a weather station to introduce students to instruments commonly used in measuring weather data.
2. Make a wind vane, a simple barometer and a rain gauge.
3. Take daily barometric and temperature readings.
4. Observe cloud types over several days.
5. Record weather conditions for an extended period of time.
6. Prepare a bulletin board report of weather reports from nespapers.
7. Set potted plants in different temperature areas and study the effect of growth.
8. Identify different cloud types.
9. Put dry ice into metal pan and watch the outside of pan.

Discussion:

1. What is weather? What are some weather elements?
2. What are some ways to make weather predictions?
3. What do clouds tell about the weather?
4. What are some basic weather elements?
5. What is the difference between weather and climate?
6. How temperature affect animal activity?
7. Is there any difference in the temperature in the same area at different times of the day? Why?
8. What is the relationship betwwen weather and the activity of living things?

9. Is there any difference in the temperature from one area to the next area? Why?
10. How does weather affect your dress habits and diet?
11. What animals do you see when it is snowing? Raining?
12. How does man create indoor weather to suit his needs? Why is this necessary?

Materials Needed:

1. Barometer (2 for outside and inside).
2. Wind direction indication.
3. Wind speed indication.
4. Thermometer.
5. Hygrometer.
6. Reference books.
7. Metal pans and cans.
8. Dry ice.

Resources:

1. Filmstrips:
   Earth Science Series - Weather, Eyegate, FS 225,226,227,228,229
   The Fundamental Elements of Weather Series, Eyegate
   Fog, Stratus and Icing, Federal Aviation Administration 1965 (free)
   You and the Weather, Texaco Inc., 1956 (free)
2. Books:
   Lehr, Burnet and Sim, Weather, Golden Press, 1965
   Iger, Eve Marie, Weather on the Move, Young Scott Books, 1970
   Fenton, Carrol and Mildred, Our Changing Weather, Doubleday and Co., 1954
   Tonnehill, Evan Ray, All About the Weather, Random House, 1953
   Schneider, Herman, Everyday Weather and How It Works, McGraw-Hill, 1961
   Feravolo, Rocco V., Junior Science Book of Weather Experiments, Garrard, 1965
   Milgram, Harry, Understanding Weather, Crowell-Collier, 1970
3. Newspapers.

Evaluation Procedure:

1. Administer attitude scale.
2. Evaluate students' weather records.
3. Teacher narrative evaluation.

THE EFFECTS OF WEATHER CHANGES ON PLANTS AND ANIMALS

Clouds Indicating

	Fair Weather	Change in Weather	Storms
Cirrus			
Cumulus			
Fog			
Stratus			
Stratocumulus			
Cumulonimbus			

WEATHER CONDITIONS RECORD SHEET

Location of Station ____________________

	1	2	3	4	5	6	7	8	9	10
Reading										
Time of day										
Temperature										
Wind direction										
Wind velocity										
Barometric pressure										
Relative humidity										
Fpt. (rain - snow) since last reading										
Clouds-type and % cover										
Description of weather at time of observation										

THE EFFECT OF WEATHER CHANGES ON PLANTS AND ANIMALS

- Attitude Scale -

Below are listed some of our activities during our study of Weather Changes. Please circle the number that best expresses how you felt about each activity. The representative numbers are:

1 - Terrible
2 - Poor
3 - Fair
4 - Good
5 - Great

1. Visiting the weather station. 1 2 3 4 5
2. Making wind vane, barometer and rain guage. 1 2 3 4 5
3. Taking temperature and barometric readings. 1 2 3 4 5
4. Recording weather conditions. 1 2 3 4 5
5. Preparing the bulletin board. 1 2 3 4 5
6. Observing different temperatures effects on plant growth. 1 2 3 4 5
7. Identification of types of clouds. 1 2 3 4 5

AWARENESS OF POLLUTION

Unit 8

Grade Level: 5-6

Content Areas: Language Arts
Math
Social Studies
Science

Concepts:

1. All living things are affected by their environment.
2. People can and do change environment in the quest for improvement.
3. Misuse of technology has adverse effect on human health, animal and plant life.
4. Man-made problems which threaten the existence of living things are the common concern of all.
5. Individuals and groups can use democratic processes as technique in solving these problems.

Performance Objectives:

By the conclusion of this unit, participating students will:

1. Comprehend an awareness of environmental pollution as measured by a completed awareness record listing five items in each designated category of air, land and water.
2. Respond to the specified activities with a minimum average score of 3.0 on a 5.0 rating scale.

Activities:

1. Take a field trip to view air pollution (smoke from furnaces, burning trash and leaves).
2. Collect samples of water and particles found on the ground.
3. Identify signs of water pollution.
4. List things in the community that cause air pollution.
5. Visit streams to see how individuals create pollution.
6. Make a white disc test of different bodies of water and record.
7. Collect dirty furnace and automobile filters to illustrate the dust and foreign particles found in air.
8. Keep a news bulletin board with up-to-date articles about pollution.
9. Identify diseases caused by polluted air and water.
10. Visit a community garbage dump and find out how garbage is disposed.
11. Count a specific number of automobiles with excessive exhaust fumes.
12. Take an "erosion walk" around the school neighborhood. Note or take pictures of such signs of land erosion and where erosion of soil has left tree roots exposed and gullies.

Discussion:

1. Who is responsible for what happens to water after it falls to the ground?
2. Why is some water not fit to use?

3. What do we mean by polluted water?
4. Why does our water which gives us life also sometimes cause illness? Death?
5. What kind of pollution may cause fish to die?
6. What happens to water that is used in some industries to wash away acids?
7. What happens to the natural beauty of an area?
8. What laws are found in your community against pollution?
9. What can citizens do to lessen air pollution and keep it clean? How can you help?
10. What structures do you find that contribute to land, water and air pollution?
11. Are there any laws in your community against littering?
12. Should playground litterbugs be punished?
13. What do you think caused gullies and tree roots to be exposed?
14. If water caused the erosion, where did the soil eventually go?

Materials:

1. Glass jars.
2. Bioscopes and microscopes.
3. White discs.
4. Used furnace filter.
5. News papers and magazines for news.
6. Films.
7. Books and pamphlets on pollution.
8. Note books.
9. Magnifying glass.
10. Shallow pans for water.

Resources:

1. Books:
   Shomon, Joseph J., Outdoor Conservation Education, National Audubon Society, 1964
   Graham, Frank Jr., Disaster by Defavet, Modern Literary Edition Publishing Co.
   Environmental Education, 1971
   Nickelburg, Janet, Field Trips, Burgess Publishing Co., 1971
   Laas, William and Beicos, Dr. S.S., The Water and Your Life
   Buchsbaum, Ralph and Mildred, Basic Ecology, The Boxwood Press, 1972
   Borland, Hal, Beyond Your Doorstep Audubon Ballantine, 1962
2. Films:
   Water, Modern Talking Picture Service (free)
   Water and Its' Many Voices, Allis Chalmer (free)
   Water Bill U.S.A., Caterpillar Tractor Co. (free)
   Air Is For Breathing, Shell Film Library, 450 North Meridian Street, Indianapolis, Indiana 46204
   But What About Tomorrow Christine?, Picadilly Films International Co., 715 Stadium Drive, San Antonio, Texas 78284

Evaluation Procedures:

1. Keep a record of at least 3 causes, effects, and preventions of pollution.
2. A students' narrative description of polltion.
3. A brief students' narrative on the effects of pollution on our lives.
4. Brief teacher narrative on pollution.

AWARENESS RECORD

List most obvious causes of pollution of air, land and water, ways of prevention and effect on human lives.

	Causes	Ways of prevention	Effects on Humans	Observation of actual pollution in our community
AIR	1 2 3 4 5			
LAND	1 2 3 4 5			
WATER	1 2 3 4 5			

AWARENESS OF POLLUTION

Water - Air - Land

- Rating Scale -

Below are listed some of our activities during the study of pollution. Please circle the number that best expresses your feelings about each activity. The numbers are:

1 - Terrible
2 - Poor
3 - Fair
4 - Good
5 - Great

1. Visiting streams and polluted areas. 1 2 3 4 5
2. Keeping a news bulletin board. 1 2 3 4 5
3. Taking samples of water. 1 2 3 4 5
4. Making tests for air pollutants. 1 2 3 4 5
5. Visiting a garbage dump. 1 2 3 4 5
6. Checking automobiles for exhaust fumes. 1 2 3 4 5

TREES - HERE TO STAY?

Unit 9

Grade Level: 5-8

Content Areas: Science
Art
Math
Language Arts

Concepts:

1. Trees are valuable to man: economically, aesthetically, recreationally.
2. Trees are valuable to animals: shelter, food.
3. All trees are classified as to deciduous or coniferons.
4. All trees have the same parts.
5. The future supply of trees is dependent upon mans' wise use.

Performance Objectives:

Students participating in the study of Tree - Here to Stay?, will, by the end of the sessions:

1. Comprehend the following:
   a. Economic, aesthetic and recreational value of trees.
   b. Measure to assure future supply of trees as measured by at least 75% of students producing written essay acceptable to teacher standards.
2. Respond to designated activities with a minimum score of 3.0 on a 5.0 rating scale.

Activities:

1. Visit a woodland.
2. Identify trees as to deciduous or coniferous.
3. Identify trees as to families.
4. Divide class into groups: one to discuss trees in relation to economics; another discuss trees in relation to beauty; another in relation to recreation. Have each group serve as panels and present findings to remainder of class.
5. Invite the conservation officer and have him speak as to how trees and animals relate to each other.
6. While in the woodland, have children draw and label the trees as to their parts.
7. Do research to find the function of each part of the tree.
8. Estimate the height usually achieved by trees in certain families in our area.
9. Invite a lumberyard owner to speak concerning the uses of lumber.
10. Visit a lumberyard so students can see what actually happens to a tree after harvest.
11. Teach children to determine the age of the trees by its rings from a cross cut section and a core sample.
12. Invite a person from Division of Forestry and speak concerning "Trees and Man's Future".
13. Determine cost of different types of lumber and determine the factors that influence this cost.

Discussion:

1. What did you enjoy about our trip to the woodland?
2. What trees were most common and to what do you attribute this?
3. What is the basis for identifying tree families?
4. What economic values have you and your family recieved from trees?
5. What are the many ways that trees benefit animals in your area?
6. What do you have in your home that came indirectly from the lumberyard and through what process did it go to get there?
7. From the study thus far, what do you feel the relationship to be between the tree and man's future?

Materials Needed:

1. Sketch book.
2. Outdoor woodland.
3. Core-barrel.
4. Section from tree trunk that has been cut.

Resources:

1. Zim and Martin, Trees - A guide to familiar American trees, Golden Nature Guide.
2. Cormack, M.B., First Book of Trees, Franklin Watts, Inc., New York
3. Hutchins, Ross E., This is a Tree, Dodd, Mead, and Co., New York, 1964
4. Milne, Lorus and Morgery, Because of a Tree, Atheneum, New York, 1969
5. Lemmon, Robert S., Junior Science Book of Trees, Garrard Publishing Company, Champaign, Ill., 1960
6. Films from Kentucky Forestry Division.
7. Local forest ranger and conservation officer.
8. Filmstrips:
   Educators Guide to Free and Inexpensive Materials - Educators Progress Service Inc., Randolph, Wis.:
   The Life of a Tree - Lassen Volcanic National Park, 1971 (free)
   The Woods At Home - American Humane Education Society, 1955 (free)
   The Ballad of the Trees - Modern Talking Picture Service
   The Eternal Forest - Forest Service USDA, 1970
   The Walking Forest - Union Pacific Railroad
   The Tree - Churchill Films, 1963
   The Conservation of Our Forest, Eyegate, 1958, FS 417
   Our Dependence on Lumber Workers, Curriculum Film Inc., FS 18

TREES - HERE TO STAY?

- Rating Scale -

Below are listed activities you participated in during our study of trees. Please circle the number that best expresses how well you liked each activity.

1 - Did not like
2 - Poor
3 - Fair
4 - Good
5 - Great

1. Visiting the woods. 1 2 3 4 5
2. Identifying tree families. 1 2 3 4 5
3. The discussion groups. 1 2 3 4 5
4. Listening to the conservation officer. 1 2 3 4 5
5. Drawing and labeling the tree parts. 1 2 3 4 5
6. Reading about trees. 1 2 3 4 5
7. Visiting the lumberyard. 1 2 3 4 5
8. Determining the age of trees. 1 2 3 4 5

HABITAT OF WILDLIFE

Unit 10

Grade Levels: 5-6

Content Areas: Social Studies
Math
Science

Concepts:

1. Animals are protected by their habitat.
2. Habitat of wild animals are related to their food supply.
3. Living things are adapted to a particular environment.
4. Seasonal changes affect animals movement.
5. Animal tracks are valuable clues for identifying their behavior.

Performance Objectives:

By the end of the session on Habitat of Wildlife, participating students will:

1. Comprehend natural habits of various animals as judged by their individual animal record sheets.
2. Respond favorable to the various activities by writing their expressions of what they liked and/or disliked.

Activities:

1. Read books and magazines and study habits of wild animals.
2. Take field trips at different intervals for the following activities:
   a. Look for burrows and other openings.
   b. Try to determine number of entrances.
   c. Determine if home is in use (lay small pieces of grass or fine sand at entrance).
   d. Make a map to spot all farm and wildlife in a certain area.
   e. Make plaster casts of tracks and keep record of where found.
   f. Trap to catch live animals to observe behavior when caught. Release after observation.
3. Plan a "Thanksgiving" or "Christmas" dinner for the wildlife of the woods.
4. Collect materials for food from nature (nuts, seeds, berries, wild grapes and table scraps etc.)

Discussion:

1. Why study wildlife habits?
2. Why are the wild creatures among our most valuable and interesting resources?
3. What shelters are provided by nature and how can man provide protection or shelter?
4. What are some different places animals live?
5. What evidence might we find to show that animals have lived there or are living there now?
6. Do all animals use their home for the same purpose?
7. Are there any animals dangerous when you approach their homes?

8. Which animals would spend the winter in a different state of existence than during the other sessions?
9. What animals stay in their homes in the day time and roam at night?
10. Will wild animals live in homes provided by man?
11. How do animals survive long winters?
12. Is there any animal that has two homes?

Materials:

1. Collection pails
2. Tape
3. Thermometer
4. Mirror
5. Field guide
6. Note pads

Resources:

1. Books (listed on last page of unit)
2. Filmstrips (listed on last page of unit)
3. Conservationist

Evaluation Procedure: Each child should:

1. Locate four animal signs.
2. Identify at least two animals on the basis of homes and tracks.
3. Locate and identify two runways.
4. Keep a record of at least four animals.
5. Student narrative description.
6. Brief teacher narrative.

HABITAT OF WILDLIFE

RESOURCES

Books:

Salsam, Millicent E., How Animals Live Together, Morrow William and Company, 1963

Barker, Will, Familiar Animals of America, Harper and Row, 1956

Hegner, Robert, Parade of the Animal Kingdom, Macmillian, 1960

Barker, Will, Winter - Sleeping Wildlife, Harper and Row, 1958

The Animal Kingdom, Danbury Press, 1970

Buchsbaum, Ralph and Mildred, Basic Ecology, The Presswood Press, 1972

Hillcourt, William, Nature Activities and Hobbies, G.P. Putnam's Sons, 1970

Pringle, Lawrence P., Discovering the Outdoor, The Natural History Press, 1967

Filmstrips:

Birds of Open Fields and Meadows, Eyegate Kit, 1971 FS 39-42

Discovery!, Tennessee Department of Conservation - TVA (Free)

Land Between the Lakes, Tennessee Department of Conservation - TVA (Free)

So Little Time, Bureau of Sport Fisheries and Wildlife, Richardson Wildlife Sanctuary (Free)

Record of observation, adaption to and research:

Common name	Habitat	Food	Season	Nocturnal Activities

ANTS

Unit 11

Grade Level: 5-8

Content Areas: Math
Science
Language Arts

Concepts:

1. Ants are interdependent with their environment.
2. Ants are social insects.
3. Ants have complex nutritional habits.

Performance Objectives:

By the end of the study of Ants, participating students will:

1. Comprehend the following characteristics of ants:
    a. Environmental interdependence.
    b. Social behavior patterns.
    c. Nutritional habits.

    as measured by 75% of the students completeing a written report acceptable to the teachers' standards.
2. Respond with a minimum score of 2.0 on a 5.0 rating scale.

Activities:

1. Take a trip to observe ants in natural surroundings.
2. Build a frame for ant home.
3. One committee may use a large glass jar for an ant home.
4. Collect an ant hill for frame to be observed in classroom.
5. Read books.
6. View filmstrips.
7. Make oral and written reports on ants.
8. Draw pictures of various kinds of ants.
9. Make a mural depicting life in an ant hill.
10. Have county agent speak about insecticides to control ants when harmful to crops.

Discussion:

1. How are ants beneficial to our environment?
2. When are ants harmful?
3. What are the different species of ants?
4. How does each type of ant fit into the ant society?
5. How is the ant society like or unlike our society?
6. How can you tell the difference between an ant and a termite?
7. How can ants predict weather?
8. Where are ants found?
9. How do we go about collecting ants?
10. How are ants depicted in literature?
11. How are ants able to carry heavy loads?
12. What insecticides can be used to control harmful ants?

Resources:

1. Books:
   Callahan, Phillip S.,Insects and How They Function, Holiday, 1957

   Bartlett, Ruth, Insect Engineers-The Story of Ants,Morrow, 1957

   Teale, Edwin Way, The Junior Book of Insects, Dutton, 1972

   Shuttleworth, Dorothy, The Story of Ants, Doubleday, 1964

   Booklets - Series:

   How and Wonder Book of Insects, Grosset and Dunlap, 1972

   Ants and Bees, Grosset and Dunlap, 1972

2. Cassette Tape and Filmstrip:
   The Ant, Eyegate, FS 302 The World of Ants
3. Pictures.
4. County agent.

Materials Needed:

1. Lumber
2. Sheets of glass
3. Large glass jar
4. Manila paper
5. Crayons
6. Paper and pencil
7. Frieze paper

ANTS

- Rating Scale -

Below are some things we did while studying ants. Please circle #1 if you disliked it, #2 if it was fair, and #3 if it was good.

1. Trip to observe ants. 1 2 3
2. The art work. 1 2 3
3. Filmstrips and records. 1 2 3
4. Oral and written reports. 1 2 3
5. Constructing ant homes. 1 2 3

Write a paragraph about what you liked best about our study of ants:

A SCHOOL GARDEN

Unit 12

Grade Level: 5-8

Content Areas: Science
Math
Social Study

Concepts:

1. A garden can provide one fresh, nutritious foods.
2. A garden provides foods more economically than purchasing from markets.
3. Production of a school garden is a venture in citizenship or in learning to work cooperatively.

Performance Objectives:

1. The participating students, by harvest time, will apply skills of planting, tilling and harvesting a school garden as evidenced by teacher observation of procedures carried out and quality of produce from the school garden.
2. By the end of the growing session, participating students will respond favorably to raising the school garden as evidenced by their positive narrative description.

Activities:

1. Plot and measure the area to be used.
2. Clear area of debris.
3. Read seed catalogues to decide which vegetables would be best suited for a school garden and make order for seeds and plantings.
4. Read instructions about planting time, spacing and preparation of the soil.
5. Test soil samplings to determine the kind and amount of fertilizer needed for various vegetables. Order fertilizer.
6. Each pupil make a budget for the total cost of tilling and purchasing seeds etc.
7. Have the soil plowed and disced.
8. Pupils rake and prepare soil; make rows.
9. Plant seeds and set plants.
10. Committees will care for each kind of vegetable.
11. Harvesting all summer by different committees.
12. Committees for preparing vegetables for freezing or storing.
13. Keep records of time and money spent working in the garden.
14. Compile complete cost of raising the vegetables. Figure cost if vegetables were bought. Determine difference in cost.

Discussion:

1. What kinds of vegetables are best suited for our climate and soil?
2. How does the chemical make-up of the soil effect the nutrients in the vegetables?
3. How can we determine that it is more economical to raise vegetables than to buy them?

4. What is the proper care of a garden? How can pupils manage a garden?
5. How is work in a garden a way to work together as good citizens?

Materials Needed:

1. A garden plot near school.
2. Hoes and rakes.
3. Seeds and cuttings.
4. Fertilizer.
5. Packages for processing of frozen food.
6. Resource persons:
   a. County agent for chemical analysis of soil.
   b. Home economist to teach proper methods for processing vegetables, etc.
7. Seed catalogues and books on garden care.
8. Get parents involved.

Evaluation Procedures:

1. Each pupil write a report about the feelings which they had during their experiences of planning, tilling, and harvesting the garden.
2. The tangible results - the quality and quantity of the harvest.
3. Teacher brief narrative evaluation.

Resources:

1. Bulletin #69 - Childrens' Gardening, Jerome T. Femal, National Recreation and Park Association, 1967
2. Baker, Samm Sinclair, The Indoor and Outdoor Grow-It Book, Random House, 1966

MAN: FRIEND OR ENEMY OF NATURE

Unit 13

Grade Level: 5-8

Content Areas: Language Arts
Science
Math
Social Studies
Art

Concepts:

1. Man has changed his natural environment for better and for worse through industry, farming, land development and his own habits.
2. Mans' dependency on nature for food, shelter and clothing makes clear that man himself is also a part of nature.
3. Businesses, industries and private citizens are working to return the land to a usable and attractive state through reforestation, recycling, and the proper treatment and disposal of wastes,
4. Industrial development and populations growth have scarred the earth and brought greater pollution of air and water.
5. Man influences living things by changing the environment to meet his needs.

Performance Objectives:

By the end of the study of this unit, participating students will:

1. Comprehend mans' helpful and detrimental effects of the environment as measured by each individuals written list of at least ten each of those helpful and detrimental effects.
2. Respond with a minimum score of 3.0 on a 5.0 rating scale of activities carried out.

Activities:

1. Contact, by written form, the Environmental Director in Frankfort about the disposal and pickup of wrecked cars.
2. Draw pictures showing what man has done to care for and harm the earth.
3. Visit an industrial area to observe the pollution emission.
4. Visit factories that have chemicals polluting the streams, then write letters to newspapers in the area about pollution of the streams. Be sure the factories really are polluting before letters are sent to editor. Check with Environmental Protection Agency, Health Department, etc. to substantuate the pollution level. Practice writing of letters and not actual sending to editors might be used.
5. Make a mural from an aerial point of view of the neighborhood of points of good conservation practices.
6. Visit an industry which has pollution control equipment.
7. Make a survey of your activities for one week of ways that "you" pollute your environment.
8. In your way to school, observe the areas where conservation has been practiced.

9. Observe areas where erosion of the topsoil has taken place. Then, write compositions on preventive measures.
10. Contact the conservation officer for information on ways to prevent erosion.
11. Make video-tape about ways man is both friend and enemy of nature.
12. Visit a recycling center and then make a list of all available materials that can be recycled.
13. Read story, Pandora's Box - creative writing about pollution escaping to cover the world.
14. Make a diorama.

Discussion:

1. How has man conserved his environment?
2. What are ways that you are a friend or an enemy to nature?
3. How has industry helped or hindered nature?
4. Tell of the measures taken by industry to control pollution.
5. How has recycling helped our economy?
6. How can reforestation help our lumber industry?
7. How can picking up trash help the pollution problem?
8. If it costs the taxpayer .35¢ for each piece of litter picked up, how much could you save your parents by picking up 100 pieces of litter?
9. Give a definition for each of the following words:
   a. Litter
   b. Waste
   c. Packaging
   d. Landfill
   e. Recycle
   f. Biodegradable

Resources:

1. Films and filmstrips:
   Air Pollution in Perspective, General Motors, 1971 (free)
   Aqua Folly, Boyd Film Company, 1961 (free)
   But What About Tomorrow, Christine?, Picadilly Films International Co. Ltd. (free)
   Cycles- Association, Sterling Films, 1972 (free)
   No Turning Back, United States Atomic Energy Commission, 1971 (free)
   Wildlife Conservation Today, American Humane Education Society (free)
   The Trouble With Trash, Caterpillar Tractor Co., Modern Talking Picture Service (free)
   A Time to Be, 1972 Project Outreach (free)
   Phoenix Union High School System
   2526 West Osborn Road
   Phoenix, Arizona 85017
   (may be retained)
2. Department of Forestry.
3. State Department of Conservation.
4. Conservationist to speak.
5. President of some industry to speak.

Evaluation Procedure:

1. Prepare a checklist for rating the activities above.

PRESERVING FLOWERS AND USING THEM

Unit 14

Grade Level: EMH
Adaptable for 5-8

Content Areas: Art
Science
Home Economics
Language
Math

Concepts:

1. The beauty of flowers may be preserved.
2. Preserved flowers may be used for decorative purposes.
3. Ability in handcraft is a useful skill.
4. Time is a measurement that is important for proper drying of flowers.

Performance Objectives:

By the conclusion of the session on collecting and drying of flowers, the EMH students will:

1. Apply skills of drying and arranging flowers by satisfactorily demonstrating the following techniques to the teacher:
   a. Gather appropriate flowers
   b. Pressing flowers
   c. Hand drying
   d. Preservative spraying
   e. Creating arrangements
   f. Design and decorate containers
   g. Creating artistic design (cards, pictures, etc.)
2. Respond favorably to the flower collection, drying, and arranging activities by giving a few brief oral statements describing what he liked and did not like to be recorded and maintained on an audio tape.

Activities:

1. View filmstrips, read books.
2. Field trip to wooded area, pasture, and/or flower garden - select flowers for harvesting, observe natural habitat, natural beauty.
3. Divide into groups to try different methods of preservation. Elect captain for each group.
4. Gather and sort flowers.
5. Record source of each plant and date of harvesting along with brief description of natural habitat.
6. A) one group - strip stems, tie, hand in dark, dry and warm place for two weeks drying time. Spray with clear matte-finish plastic spray.
   B) second group - make folded newspaper driers for pressing flowers. Press.
7. Students bring cans and bottles and make their own containers. Paint or decorate with paper mache, wrapping paper, string, etc.
8. Arrange sprayed flowers in selected containers.

9. Make from pressed flowers: greeting cards, book marks, place mats, and/or pictures.
10. Write summary and display finished products.

Discussion:

1. What flowers do you know? Favorite flower?
2. Where may we go to gather wild flowers? Shall we get permission?
3. What kind of soil do you think this plant needs? Shade? Moisture? Sun?
4. Shall we take the whole plant or be sure to leave root and/or seed for next year?
5. Does this plant come from seed or from root?
6. What is the difference in picking flowers and harvesting them?
7. Which flowers, leaves, etc. are suitable for spraying? Which are more suitable for pressing? Why?
8. How shall we record our activities?
9. How shall we learn the names of the plants we do not know?
10. What do we need for spraying?
11. What do we need for pressing?
12. What shall we do with our preserved flowers?
13. Where can we obtain containers for arrangements? Shall we make them?
14. What shall we do with our pressed flowers?
15. Shall we make or purchase frames for our pictures?

Materials Needed:

1. Area from which to gather flowers.
2. Baskets or other containers.
3. Paper and pencils.
4. Sheets of newspaper.
5. Oak tag, plastic (semirigid), freezer tape, florist's wire, tape, plastic spray, string, egg-white glue, containers.

Resources:

1. Suitable area for field trip.
2. Florist to demonstrate arrangement techniques.
3. Books:
   Foster, Laura Louise, Keeping the Plants You Pick, Crowell, 1970
   Hausman, Beginner's Guide to Wild Flowers, Putnam, 1948
   Hylander and Johnston, The Macmillian Wild Flower Book, Macmillian, 1954
   Cutler, Katherine N., Junior Flower Arranging, Barrows, 1957
   Zinn and Martin, A Guide to Familiar Wild Flowers, Golden Press, New York, 1950
   Podendorf, Illa, The True Book of Weeds and Wildflowers, Children's Press, 1955
4. Filmstrips:
   Wild Flowers Everyone Should Know
   How Plants Help Us
   Work of Flowers

Evaluation Procedures:

1. Teacher evaluatinn of students: Dried flowers, container decoration, and flower arrangements.
2. Brief narrative evaluation by teacher, effectiveness of activities.

MAN: FRIEND OR ENEMY OF NATURE

- Rating Scale -

Circle the number that best expresses how you value the activities listed in our study of Man: Friend or Enemy of Nature.

1 - Worthless
2 - Poor
3 - Fair
4 - Good
5 - Excellent

1. Visiting industries and observing pollution. 1 2 3 4 5
2. Drawings. 1 2 3 4 5
3. Murals of good conservation practices. 1 2 3 4 5
4. Visiting industry with pollution controll equipment. 1 2 3 4 5
5. Making a weeks survey of how we pollute. 1 2 3 4 5
6. Making a video tape. 1 2 3 4 5
7. Visiting a recycling plant. 1 2 3 4 5
8. Speakers that visited our class. 1 2 3 4 5

WATER POLLUTION

Unit 15

Grade Level: 5-8 Content Area: Science

Concepts:

1. Water contains many kinds of pollution.
2. Water pollution has harmful effects on our lives.
3. Polluted water reveals types of eroded soil, kinds of dust particles, and chemicals in the water.
4. Pollution of water has harmful effects on wildlife.

Performance Objectives:

By the end of the session on water pollution, participating students will:

1. Comprehend the following aspects of water pollution:
   a. Causes of pollution
   b. Types of pollution
   c. Effects of pollutants
   d. Treatment for pollutants
   e. Preventive measures

   as demonstrated by a written narrative description of at least five of the above aspects.
2. Apply skills of water testing and identification of pollutants as determined by maintaining records of tests conducted.
3. Respond with a positive attitude to the activities carried out by scoring a minimum of 3.5 on a 5.0 attitude scale.

Activities:

1. Visit city water and sewage plant.
2. Bring sample of water into classroom for testing and observing under microscope.
3. Take a field trip to polluted pond, strean, lake, or irrigation ditch.
4. Visit various industrial plants which need water for various processes, such as washing, dyeing, cooling.
5. Collect a specimen of water from different areas and place the samples in seperate dishes to evaporate and examine for composition.
6. Pollute fish bowl in class and observe the results.
7. Research for kinds of diseases caused from polluted water.
8. Research for various kinds of wildlife effected by polluted water.
9. Compare the discoloration of water in area and determine the cause.
10. Produce a skit on animals and water pollution.

Discussion:

1. What are some possible causes of pollution?
2. What can be done to elinimate the pollution and insure a pure water supply?
3. What are some possible pollutants?
4. What were the chemicals that went into purification of water and disposing of the sewage?

5. What are the industrial plants doing to eliminate their wastes?
6. What do the state and county do to protect pollution of streams?
7. How do you protect water from disease germs?

Resources:

1. Films and filmstrips.
2. Pictures.
3. Conservation officer.
4. Water commissioner.
5. Health department personnel.
6. Physicians.
7. Paul Miller - Area Water Pollution Control representative.
8. Books:
   Laas, William, Beicas, Dr. S.S., The Water in Your Life
   Arnold, Augusta Foote, The Sea - Beach at Ebb-Tide, Dover Publications, Inc., 1968
   Kane, Henry B., The Tale of a Pond, Alfred A. Knopf, 1960
   Buck, Margaret Waring, In Ponds and Streams, Abington Press, 1955
   Schneider, Herman and Nina, Rocks, Rivers - The Changing Earth
   Graham, Edward H., Van Dersal, William R., Water for America, Walck, 1956
   Feravolo, Rocco V., Junior Science of Water Experiments, Garrard, 1965
   Meyer, Ferome S., Water at Work, World, 1963
   Riedman, Sarah R., Water for People, Abelard, 1960

Evaluation Procedures:

1. Students' narrative descriptions.
2. Students' records of water testing.
3. Student attitude scale.
4. Teacher brief narrative evaluation.

WATER POLLUTION

- Rating Scale -

Below are some things we did during our study of water pollution. Please circle the number that best expresses how well you liked each activity. The numbers are from 1-5 as follows:

1 - Did not like
2 - Poor
3 - Fair
4 - Good
5 - Excellent

1. Field trip to water and sewage plant. 1 2 3 4 5
2. Looking at water samples through the microscope. 1 2 3 4 5
3. Evaporating water samples. 1 2 3 4 5
4. Studying a polluted fish bowl. 1 2 3 4 5
5. Research reading. 1 2 3 4 5
6. Producing a skit. 1 2 3 4 5

FUELS - HOW LONG WILL THEY LAST

Unit 16

Grade Level: 5-8

Content Areas: Science
Social Studies
Language Arts
Math

Concepts:

1. Natural gas is used to heat homes, business houses and factories.
2. Gasoline is used for fuel for cars, trucks, tractors, busses and other vehicles.
3. Fuel oil is used for heating homes.
4. Diesel fuel is used for transport trucks and tractors.
5. Coal is used for heating homes and fuel for industry.
6. Wood is used for heating homes.

Performance Objectives:

By the conclusion of this unit, participating students will:

1. Comprehend the sources, uses and future limited supply of fuels as measured by a minimum score of 70% on a teacher made test.
2. Respond to the specified activities with a minimum average score of 3.0 on a 5.0 rating scale.

Activities:

1. Visit an active natural gas well in the county.
2. Write a history of gas or oil wells.
3. Examine a lump of coal to observe its' chemical make-up.
4. Make a chemical garden.
5. Make charts of the heat values of fuels.
6. Visit a service station to learn the different products made from crude oil.
7. Make a survey as to what types of fuel are being used and to what extent.
8. View films and filmstrips.
9. Make a report on the formation of coal.
10. Use the microscope to find the fibers and spores of the plants from which coal was derived.
11. Make a model of the first gas well.
12. Draw the rock formations in which petroleum is often found.
13. On a map of your county, locate the natural gas well.
14. Write a research paper on off-shore oil drilling.
15. Make a flow-chart tracing crude oil to finished product.

Discussion:

1. How many types of fuel are there?
2. What are they?
3. What are the solid fuels?
4. What does BTU mean?

5. Which type of fuel is most commonly used?
6. Where do most of the fuels in your county come from?
7. What type of fuel do you use?
8. What do you see, as far as fuels are concerned, for the future?

Resources:

1. Books:
   The Book of Popular Science, Grolier Inc., Books I, IV, V, compiled by Hilary J. Deason
   World Book Encyclopedia
   Young People's Science Encyclopedia
2. Films:
   Fill' Er Up, Educators Progress Service, Inc., Randolph, Wis., 1959 (free)
   Flame of the Future, American Gas Association (free)
   More Oil and Gas for Today and Tomorrow, Interstate Oil Compact Commission, 1963 (free)
3. Invite a geologist and other resource people to speak.

Evaluation Procedures:

1. Administer teacher made test.
2. Administer rating scale.
3. Teacher narrative evaluation.

FUELS - HOW LONG WILL THEY LAST

- Rating Scale -

Below are listed some of the activities we did during our study of Fuels. Please circle the number that best expresses how you felt about each activity. The numbers are:

1 - Terrible
2 - Poor
3 - Fair
4 - Good
5 - Great

1. Visiting a natural gas well. 1 2 3 4 5

2. Writing the history of a gas well. 1 2 3 4 5

3. Making a chemical garden. 1 2 3 4 5

4. Making charts of the heat value of fuels. 1 2 3 4 5

5. Viewing films and filmstrips. 1 2 3 4 5

6. Making a model of a gas well. 1 2 3 4 5

7. Research paper on off-shore drilling. 1 2 3 4 5

8. Making a chart on crude oil to finished products. 1 2 3 4 5

THE VALUE OF WILDLIFE

Unit 17

Grade Level: 5-8

Content Areas:
Language Arts
Science
Art
Math

Concepts:

1. There is a relationship between the environment and living things.
2. A necessary relationship exists between certain species of wildlife and predators.
3. Animals living in the same environment with others of its' kind and other species, must compete for space, food and protection from enemies.
4. The extinction of some wildlife is determined by their habitat.
5. Environment determines the kind of animals which live in the community.

Performance Objectives:

By the end of the study, participating students will:

1. Comprehend types of wildlife in Kentucky as demonstrated by 75% of the students completing a scrapbook judged acceptable by the teacher.
2. Acquire a knowledge of various animal characteristics and habits as measured by 75% of the students satisfactorally carrying out specified activities as listed on a teacher checklist.
3. Respond with a minimum average score of 3.0 on a 5.0 attitude scale.

Activities:

1. Have a bowl of tadpoles, minnows, turtles or frogs and ask if these would live in a desert environment.
2. Have a live animal in a cage and ask if this animal would live in a water environment,
3. Make a map and locate the regions of habitat of the different animals.
4. Tape animal pictures on wrapping paper and invite the students to write any comments they wish under each picture. The finished montage will be a colorful decoration for the bulletin board,·
5. The class will be taken on a field trip to observe animal life in different communities.
6. Make a list of the animals observed in the woods and identify each.
7. Make a mobile by using animal pictures.
8. Have the students draw animal features on brown paper bags which can be slipped over the students' heads. Each student, through role playing, describes the ecological good deeds he performs in nature.
9. Have the students research recent legislation forbidding the sale of alligator shoes and bags. What other legislation is pending with respect to animal skin clothing?
10. Have students list the various predators, their predominant prey and the endangered species.

11. Calculate the amount of food consumed by a small animal in relatinn to the food chain of the animal community.
12. Have a conservationist speak on extinction of animals in certain areas.
13. Write to pupils in schools of other states and ask for information concerning wildlife in their states.
14. Make a scrapbook of your states' wildlife. (Drawings, clippings, summaries, etc.)
15. Invite an older resident of the community to talk to the class on wildlife and fish of earlier times.'
16. Poster of animal tracks drawn to scale.
17. Plaster casts of animal tracks.

Resources:

1. Books:
   Wood, Frances, Wildlife - Conservation, Dodd, 1968
   Torbert, Floyd James, Wildlife - Conservation, Hastings House, 1968
   Gates, Richard, Wildlife- Conservation, Children's Press, 1958
   McCoy, Joseph J., Wildlife - Conservation, Lophrop, 1969
   Murphy, Robert, Wildlife - Conservation, Dutton, 1969
   McCoy, Joseph J., Saving Our Wildlife, Crowell-Collier, 1970
   Russell, Solveig Paulson, Wildlife - Conservation, Melmont, 1960
   Laycock, George, Wild Refuge, Natural History, 1969
   Smith, Francis C., First Book of Conservation, Watts, 1954
2. Filmstrips:
   Wildlife Conservation, Kit #12 FS 419
   Wildlife Conservation Today, American Humane Education Society
   Learning About Animals
   Animal Homes, McGraw-Hill
3. Films:
   How Animals Help Us
   Patterns of the Wild
   Plant - Animal Communication - The Physical Environment
4. U.S. Fish and Wildlife Service
5. Pamphlet, Forests and Wildlife

THE VALUE OF WILDLIFE

- Attitude Scale -

Below are listed some activities we did during our study of The Value of Wildlife. Please circle the number that best expresses how well you liked each activity. The numbers are:

1 - Terrible
2 - Poor
3 - Fair
4 - Good
5 - Great

1. Making a map and location of animal habitats. 1 2 3 4 5
2. Making a montage for the bulletin board. 1 2 3 4 5
3. Field trip to observe animals. 1 2 3 4 5
4. Making animal picture mobiles. 1 2 3 4 5
5. Acting out animal behavior. 1 2 3 4 5
6. Researching laws. 1 2 3 4 5
7. The speaker on animal conservation. 1 2 3 4 5
8. Making a scrapbook. 1 2 3 4 5
9. Making posters of animal tracks. 1 2 3 4 5
10. Making plaster casts of animal tracks. 1 2 3 4 5

Teacher Activity Checklist:

1. Locate eight animal signs.
2. Identify four animal tracks.
3. Identify homes of two animals.
4. Identify two animal runways.
5. Locate and identify two animals on the basis of teeth marks.

THE SCHOOLS' PLAYGROUND: A LEARNING LABORATORY

Unit 18

Grade Level: 5-8

Content Areas:
Math
Language Arts
Health
Social Studies
Industrial Arts

Concepts:

1. The schoolground can be a learning laboratory.
2. Health is enhanced by outdoor play,
3. Nature contributes to aesthetic value of play and song.
4. Climate and weather affect outdoor learning activities.
5. Group work and play in an outdoor setting helps develop good citizenship.

Performance Objectives:

1. By the end of this unit, participating students will apply skills of planning and developing an outdoor learning laboratory as demonstrated by the development of the finished product as measured by a written description of its uses and drawings showing its design.

2. By the end of the development of the outdoor laboratory, participating students will respond with an average minimum score of 3.0 on a 5.0 rating scale to the various activities.

Activities:

1. Plot and measure the area for the playground. Figure area.
2. Draw a plan for placement of rustic playground equipment.
3. Plan for the placement of trees, shrubs and wildflowers.
4. Make scale drawings of the equipment.
5. Develop nature trail.
6. Learn games and songs which lend themselves to outdoor play.
7. Correct hazards on the playground.
8. Write creative stories, songs and poems about nature and the world of our playground.
9. Make bird houses and feeders.
10. Make swings, see-saws and a merry-go-round.
11. Make outdoor seating area for outdoor classroom by using logs.
12. Make a bulletin board using drawings of the outdoor learning laboratory.

Discussion:

1. What do you think would be necessary for an outdoor learning laboratory?
2. What size should it be?
3. What kind of equipment do you think would be good in outdoor playground?
4. What uses could be made of an outdoor laboratory?

5. What would present hazards in the outdoor laboratory?
6. How many 12 ft. logs would be needed to seat our class?
7. After visiting the area what do you think we should do first in making our outdoor learning laboratory?
8. List the hazards you found on the area. How can we alleviate these?

Materials Needed:

1. Lumber and nails for building equipment.
2. Yardsticks.
3. Tags for labeling the trees etc.

Resources:

1. Books:
   Hammerman, Hammerman, Teaching In The Outdoors, Burgess Publishing Company, Minneapolis, Minn., 1964
   How and Wonder Book of Rocks and Minerals, Grosset and Dunlap, New York
   Snedigar, Robert, Our Small Native Animals: Their Habits and Care, Dover Publications Inc., New York, 1963
   Miller, Peggy L., Creative Outdoor Play Areas, Prentice - Hall Inc., Englewood Cliffs, New Jersey, 1972
   Pettit, Ted S., A Guide to Nature Projects, W.W. Norton and Company, Inc., Nasville, 1950
   Buck, Margaret Waring, In Woods and Fields, Abington Press, Nashville, 1950
   Discovering The Outdoors, Edited by Lawrence P. Pringle, The Natural History Press, Garden City, New York, 1969
   Harlow, William M., Trees, Dover Publications, New York, 1957
   Parsons, Frances, How to Know Ferns, Dover Publications, New York, Orginally published 1899
   Hutchins, Rosa E., Galls and Gall Insects, Dodd, Mead and Co., 1969
   Nickelsburg, Janet, Field Trips, Burgess Publishing Co., Minneapolis, Minn., 1971
   Mand, Charles L., Outdoor Education, Charles and Merrill Publishing Co., Columbus, Ohio
   Audubon Society, Planning a Nature Center (Manual 1966)
2. Films:
   An Approach to School Site Planning, International Film Bureau 1966
3. Audio Tapes:
   Learning
   Beginning Styles and the Environment
   The Teachers' Role
   (Educator's Guide to Free Tapes, Scripts and Transcriptions, Randolph, Wis., Educators Progress Service Inc.)
   Manual of Outdoor Conservation Education, National Audubon Society, 1968 (free)
4. Filmstrips:
   Set of 5:
   The Lamb and the Bluebells
   The Muddy Raindrops
   A Picnic for Dick and His Friends
   Susan and the Forest Fire, land
   Conservation Today

Filmstrips (Continued):
The Deer and the Haystack. American Humane Education Society, Educators Progress Service, Inc., Randolph, Wisconsin

5. Cassette:
Outdoor School Songbook and Tape

Evaluation Procedures:

1. Administer rating scale.
2. Evaluate finished laboratory.
3. Teacher narrative evaluation.

THE SCHOOLS' PLAYGROUND: A LEARNING LABORATORY

- Rating Scale -

Below are listed some activities we did during the development of our playground learning laboratory. Please circle the number that best expresses how well you liked each activity. The representative numbers are:

1 - Terrible
2 - Poor
3 - Fair
4 - Good
5 - Great

1. Plotting and measuring the playground area. 1 2 3 4 5
2. Drawing plans for the laboratory. 1 2 3 4 5
3. Developing the nature trail. 1 2 3 4 5
4. Writing stories, poems and songs. 1 2 3 4 5
5. Making bird houses and feeders. 1 2 3 4 5
6. Making outdoor play equipment. 1 2 3 4 5
7. Making an outdoor classroom. 1 2 3 4 5

WILDFLOWERS

Unit 19

Grade Level: 5-8

Content Area: Art
Science
Language Arts

Concepts:

1. A living thing is the product of its heredity and environment.
2. A sense of beauty is essential to the well being of man.
3. Living things are adapted to a particular environment.
4. Living things will reproduce themselves and develop in a given environment.
5. Man influences living things by changing the environment to meet his needs.

Performance Objectives:

By the conclusion of the session on Wildflowers participating students will:

1. Comprehend the different environment conditions under which various wildflowers exist as determined by the teachers evaluation of students written narrative with at least 75% of these narratives judged acceptable.
2. Respond to the designated activites with a minimum average score of 3.0 on a 5.0 rating scale.

Activities:

1. Plan a field trip to woods and along a stream.
2. Collect a sample of wildflowers and notice difference in color and smell of wildflowers.
3. View filmstrips and pictures.
4. Read books on wildflowers.
5. Dissect a flower and learn names for various parts of flower (stamen, petal, pistil, etc.)
6. Drying and mounting flowers.
7. Write paragraph describing favorite wildflowers.
8. Make oral reports on wildflowers.
9. Make a terrarium using wildflowers and moss.
10. Make drawings of wildflowers.
11. Write poetry about favorite wildflowers.

Discussion:

1. What are some wildflowers common to our soil?
2. What are the names of parts of flowers?
3. How are wilflowers protected in their environment?
4. How should we harvest wildflowers.
5. What are some uses of wildflowers.
6. How do we belance a terrarium?

Materials Needed:

1. Paper and pencils.
2. Crayons.
3. Drawing paper.
4. Glue.
5. Construction paper.
6. Dissecting knives.
7. Glass container for terrarium.

Resources:

1. Books:
   Dana, Mrs. William Starr, How to Know the Wildflowers, Dover Publications, Inc., New York, 1962
   The How and Why Wonder Book of Wildflowers, Grosset and Dunlap, 1972
   Zim, Herbert Spencer, Flowers, Golden Press, New York, 1950
   Zim and Martin, Flowers, A Guide to Familiar Wildflowers, Golden Press, New York, 1950
   Cutler, Katherine N., Junior Flower Arranging, Barrows, 1957
   Foster, Laura L., Keeping the Plants You Pick, Crowell, 1970
   Hansmon, Ethel Hinckley, Beginners' Guide to Wildflowers
   Wharton and Barbour, A Guide to the Wildflwers and Ferns of Kentucky
   Hylander, Johnston, The MacMillan Wildflower Book
   Parson, Frances T., How to Know the Ferns
   Pettit, Ted, A Guide to Nature Projects
   Coon, Nelson, Using Wayside Plants
   Aldrich, Creating With Cattails, Cones and Pods
   Ferguson, Grace, Wildflowers
2. Filmstrips:
   Wildflowers Everyone Should Know
   Work of Flowers
3. Pictures

Evaluation Procedures:

1. Administer rating scale.
2. Evaluate student narrative.
3. Teacher narrative evaluation.

WILDFLOWERS

- Rating Scale -

Below are listed some activities we did during our study of Wildflowers. Please circel the number that best expresses how you felt about each activity. The numbers are:

1 - Terrible
2 - Poor
3 - Fair
4 - Good
5 - Great

1. Outdoor field trip. 1 2 3 4 5
2. Viewing films and filmstrips. 1 2 3 4 5
3. Collecting samples of wildflowers. 1 2 3 4 5
4. Drying and mounting flowers. 1 2 3 4 5
5. Making oral reports. 1 2 3 4 5
6. Drawing wildflowers. 1 2 3 4 5
7. Writing poems. 1 2 3 4 5
8. Making a terrarium. 1 2 3 4 5

HONEY BEES

Unit 20

Grade Level: 5-8

Content Areas: Language Arts
Art
Math

Concepts:

1. Living things are interdependent with each other.
2. Living things are interpendent with their environment.
3. Living things take matter from their environment and return it to their environment.
4. Living things work together to support and maintain the balance of nature.
5. Life within the group imposes duties and responsibilies as well as entailing rights and privileges.
6. The world of the bee is one of beauty and balance, charm and mystery.

Performance Objectives:

By the conclusion of the study of Honey Bees, participating students will:

1. Comprehend various aspects of the honey bees' behavior as described in the discussion questions of this unit as measured by 75% of the students written reports judged by the teacher as satisfactorily covering those questions.
2. Respond with a minimum of 2.0 on an attitude checklist.

Activities:

1. Bulletin board display of beehive.
2. Build a beehive and its frame.
3. Show filmstrips and films on bees.
4. Read books on bees.
5. Give oral and written reports on bees.
6. Collect samples of honey in comb made in different areas.
7. Have a tasting party.
8. Have an apiarist (beekeeper) talk to the class.
9. Craw honey comb designs.
10. Skit to simulate the contrast in the bee society and our society.

Discussion:

1. What are the names of the members of a bee society?
2. How do bees protect the hives?
3. How do bees reproduce?
4. How do bees depend upon plants?
5. How do plants depend upon bees?
6. How is our society like that of a bee and how is it different?
7. How are bees sometimes a danger?
8. In what other ways are bees helpful?
9. What are the enemies of bees?
10. How fast do bees fly?
11. What are some by-products of bees?

12. Where do bees make nests?
13. What do they feed upon in winter?

Materials Needed:

1. Manila paper for drawing.
2. Lumber, nails, etc.
3. Containers for collection of honey.

Resources:

1. Books:
   Lane, Ferdinand C., All About the Insect World, pp. 70-80
   Ipsen, D.C., What Does a Bee See?
   Callahan, Phillip S., Insects and How They Function
   Rood, Ronald N., The How and Why Wonder Book of Insects, pp. 36-38
   The Junior Book of Insects, pp. 168-182
   Tibbets, Albert, The First Book of Bees
2. Films:
   Bees For Hire, Texaco Company
   The Hidden World, Aetna, Life and Casualty
   Biography of the Bee, Texaco
3. Filmstrip:
   Honey Bee
4. Apiarist (beekeeper)
5. Pictures

Evaluation Procedures:

1. Administer attitude checklist.
2. Evaluate student written reports.
3. Teacher narrative evaluation.

HONEY BEES

- Rating Scale -

Below are some statements about our study of the honey bees. Please circle the number that best expresses how you felt about each activity. The numbers are:

1 - Disliked
2 - Okay
3 - Liked

1. Did you like and enjoy the building of the beehive? 1 2 3
2. How about the tasting party? 1 2 3
3. What about the talk given by the apiarist? 1 2 3
4. Did you like the study of bees? 1 2 3
5. Do you think you would like to work with bees? 1 2 3
6. Viewing films and filmstrips. 1 2 3
7. Doing the skit? 1 2 3
8. Collecting samples of honey comb? 1 2 3

MOCK GENERAL ASSEMBLY

Unit 21

Grade Level: 7-8

Content Areas: Social Studies
Language Arts
Art
Music

Concepts:

1. Laws are essential to mankind.
2. There is a moral obligation to exercise your right of franchise.
3. There are systematic procedures in law-making.

Performance Objectives:

By the end of the session, participating students will:

1. Comprehend the systematic process of law making as demonstrated by a minimum score of 75% on a teacher made test.
2. Respond to the activities incorporated in the Mock General Assembly with a minimum composite score of 2.0 on a 3.0 attitude scale.

Activities:

1. Make ballots, hold a mock election, and tabulate results.
2. Some children serve as lobbyist.
3. Have attorneys and congressmen as resource people.
4. Write compaign song, slogans, and speeches.
5. Divide groups concerning issuses and debate these.
6. Observe general assembly in session.
7. Draft bills on problems of the environment.
8. Vote on the bills.
9. Design buttons and posters.
10. Make a voting machine.

Discussion:

1. Why are laws needed?
2. How are laws made?
3. What does the Constitution say about laws and law making?
4. How are our law makers chosen?
5. How are Congressional districts set up?
6. Who are lobbyists and what do they do?
7. Through what procedure does one go to have ones name placed on a ballot?
8. What is the criteria you use to choose a definite side of an issue?
9. How are laws related to our environment?
10. Is it morally right not to exercise your own right as an American citizen to choose the condidate whom you think is right? (Buying and selling votes.)

Materials Needed:

1. Civic textbooks.
2. Box for voting booth.
3. Curtain.
4. Films and filmstrips.
5. Constructinn paper for buttons and posters.

Resources:

1. Books:
   Schull, Rebecca, Our Government at Work, Sterling, 1962
   World Book Encyclopedia
2. Attorneys and legislators.
3. Rules for parliamentary procedure.
4. Kentucky Constitution.
5. "How to Hold Mock General Assembly" By Dr. Jenkins at Western.
6. Filmstrips:
   Why Study Democracy? McGraw Hill Company FS 176
   How Our Laws are Made, McGraw Hill Company FS 179
   Basic Ideas for Democratic Government, McGraw Hill Company FS 173

Evaluation Procedures:

1. Teacher will write a brief description of observation of pupils response to the activities.
2. Administer teacher made test.
3. Administer an attitude scale.

MOCK GENERAL ASSEMBLY

- Rating Scale -

On this attitude or values scale, indicate by choosing 1,2 or 3.

1 - Poor
2 - Okay
3 - Great

Choose the number that best expresses how you feel concerning the activities we did during study of the General Assembly.

1. Debates. 1 2 3
2. Trip to Frankfort. 1 2 3
3. Resource person or persons. 1 2 3
4. Mock election. 1 2 3
5. Film and filmstrips. 1 2 3
6. Writing of song, slogans and speeches. 1 2 3
7. Art activities. 1 2 3
8. Mock of lobbyist. 1 2 3
9. Drafting of bills. 1 2 3
10. Team work. 1 2 3

POLLUTION CONTRIUBUTES TO ENVIRONMENTAL PROBLEMS Unit 22

Grade Level: 7-8

Content Areas: Science
Social Studies
Language Arts
Math

Concepts:

1. There are five major types of pollution.
2. Man causes pollution.
3. Every individual can do something to help remedy the pollution problem.
4. Man must establish priorities as to his values if the problems are to be solved.
5. When anything is saturated it will hold no more.

Performance Objectives:

At the conclusion of the unit on pollution, participating students will:

1. Respond favorable to the study of environmental problems by a positive response of at least 2.0 on a 3.0 attitude scale.
2. Comprehend factors contributing to environmental pollution by developing a composite listing by consensus of the following:
   a. Individual responsibilities
   b. Major man-made causes of pollution
   c. Essentials for mans' livelihood
   d. What is non-essential that man could live without

Activities:

1. View filmstrips concerning the five major types of pollution.
2. Take children to areas where there are problems in all five types of pollution existing.
3. Test air for pollution from exhaust fumes.
4. Test water for pollution from area visited.
5. Test automobiles for rate of pollution emission.
6. Let each child keep a record of solid waste accumulated in their home in a weeks time.
7. Calculate the solid waste accumulated by homes in given populus cities.
8. Identify the sources of pollution in the five catagories in this country. (This should be divided into team work on a different type of pollution).
9. Project what living conditions will be like fifty years from now if nothing is done about our pollution problems. (Done by skit or dramatization).
10. Simulate a model city with proper environmental controls.
11. Experiment with different materials (solid, liquid, gas) to determine their saturation points.
12. Compile a list of these things essential for man's existence, those that are not essential - class consensus.

Discussion:

1. What are the causes of the five major types of pollution?
2. What is our individual responsibility?
3. What are the civic responsibilities? (Community agents, government agencies, business and industry and individuals).
4. What do you consider our greatest pollution problem in relation to areas visited?
5. Since we live in a rural area, why should we be concerned with pollution in larger areas that are so far removed from us?
6. Saturation points under different conditions. Examples: 1. Excessive fish population in an acquarium. 2. Over populated society, power shortage, food shortage, fuel shortage, etc. 3. Impurities in air and water to support life. 4. A sponge.
7. What sacrificies must man be willing to make in his life habits to establish priorities for those things which are essentials and which are luxuries?

Materials Needed:

1. Testing materials for water and air pollution.
2. Aquarium.
3. Various materials for saturation test.
4. The Nystrom Ecology Kit
   a. Filmstrips
   b. Audio tapes
5. Coca-Cola Ecology game.

Resources:

1. Books:
   Wentworth, Couchman, MacBean, Strecher, Pollution, Examining Your Environment, Mine Publications, Inc., Minneapolis, Minn.
   Shuttleworth, Dorothy, Clean Air - Sparkling Water, Doubleday, 1968
   Leinwood, Gerald, Air and Water Pollution, Washington Square Press, 1969
   Brennan, Matthew J., People and Their Environment, J.G. Ferguson Publishing Company, Chicago
2. Filmstrips:
   Natural Gas and Clean Air, American Gas Association
   But What About Tomorrow, Christina?, Picadilly Films Internation Co., Ltd.
   All The Difference, Eastman Kodak Company, 1970
   Can We Have A Little Quiet Please?, Federal Aviation Administration, 1971
   The Case Against Chicken Little, Modern Talking Picture Service
3. Films:
   Is Whistling a Noise?, International Tell Films Enterprises, 1970
   Tom Lehrer Sings Pollution, National Medical Audio - Visual Center
4. Filmstrip Series:
   Conservation of Our Resource Series, Numbers: FS 412, 413, 414, 415, 416, 417, 418, 419, 420

Evaluation Procedures:

1. Administer attitude checklist and retain.
2. Retain complete student list as stated in objective #2.

POLLUTION CONTRIBUTES TO ENVIRONMENTAL PROBLEMS

- Rating Scale -

Below are listed some things we did in our study about pollution in our environment.

To the right of each activity, please circle #1 if you did not like it, #2 if it was okay, and #3 if it was great. Please rate each activity and check how you feel. Do not sign your name.

1. Viewing filmstrips and listening to tapes. 1 2 3
2. Visiting places where pollution is a problem. 1 2 3
3. Testing for air pollution. 1 2 3
4. Testing water for pollutants. 1 2 3
5. Testing cars for ones that exhaust the most pollutants. 1 2 3
6. Keeping records of solid wastes at home. 1 2 3
7. Determine solid wastes of a city. 1 2 3
8. Finding out about sources of pollution in this country. 1 2 3
9. Working in teams. 1 2 3
10. Doing skit or drama on fifty years in the future. 1 2 3
11. Making up a model city design. 1 2 3
12. Our discussion sessions. 1 2 3
13. Experiments on saturation. 1 2 3
14. Library research. 1 2 3

POND LIFE

Unit 23

Grade Level: 7-8

Content Areas: Science
Math
Language Arts
Art

Concepts:

1. Pond life is made up fo the pond itself - pond edge - surrounding area.
2. Many types of life are found in these areas.
3. Food chain can begin and end here.
4. Plant succession is a gradual process.
5. The size and volume of a pond is important to amount of life found in the pond.

Performance Objectives:

At the conclusion of the unit the participating students will:

1. Respond favorably to the pond study with a composite score of at least 2.0 on a 3.0 attitude checklist.
2. Value the establishment of a terrarium by 50% of the students making their own terrariums as an optional activity.
3. Comprehend factors that are evident in establishing concepts stated in the unit on pond study by scoring a minimum of 75% on a teacher made test.
4. Analyze:
   a. Plant and animal succession factors influencing them.
   b. How and why communities change.
   As determined by a minimum score of 75% on a teacher made test.

Activities:

1. See films and filmstrips on pond life and read books.
2. Trip to pond and surrounding area.
3. Estimate and measure circumference, diameter and depth.
4. Compute volume.
5. Take microscopic and macrosopic specimens.
6. Make small wire baskets to collect samples from the different areas of the pond. (Make list of specimens found).
7. Give ratio of aquatic life to the water quantity of the pond.
8. Use conservation person.
9. Set up aquariums and terrariums in room to contain specimens.
10. Figure the fish capacity of the aquarium in relation to oxygen content and the limitation of the amount of water disposal possible.
11. Estimate size and amount of soil necessary to support plant life in a terrarium.
12. Sketches and detailed drawings of pond and areas and some life found there.
13. Organize children in teams for specific activities.
14. Optional activity - make own terrarium from jars and bottles, etc.

Resources, Continued:

1. County agent.
2. Conservation person.
3. Biology teacher from college.
4. Films: The Pre-Pond, Partnerships Midway Among Plants and Animals
5. Cornell Science Leaflets:
   a. Pond Life
   b. Water Wonders
   (Cornell Science Leaflets, Research Park, Cornell University, Ithica, New York 14650)

Evaluation Procedures:

1. Administer attitude checklist.
2. A brief narrative by teacher of her observation.
3. Teacher made test.

Discussion:

1. Initiate study of pond life with discussion of what we would expect to find in and around a pond.
2. What was most abundant and the least abundant types of life found?
3. What are the factors which regulate the amount of life found in and around the pond? (Chemicals - stagnation - etc.)
4. What natural changes could or would occur in this pond if it remained undisturbed for a long period of time?
5. What plants or animals found in area were familiar or unfamiliar to you?

Materials Needed:

1. Wire basket (fine mesh wire baskets made by children)
2. Plankton net
3. Kitchen strainer
4. Pan
5. Jars
6. Hand lens
7. Plastic spoon
8. Microscope
9. Slides
10. Aquarium and terrarium

Resources: Books:

Kane, Henry B., The Tale of a Pond, Alfred A. Knopf, 1960

Buck, Margaret Waring, In Pond and Stream, Abnigdon Press, Nashville, 1955

Mannix, Daniel, Troubled Waters, Pocket Books, New York, 1971

Lass, William, Beicos, Dr. E.C., The Water In Your Life, Popular Library, New York, 1967

Cooper, Elizabeth K., Science on the Shores and Banks, Harcourt Brace and World Inc., 1960

Corner, E.J.H., The Life of Plants, The New York Library, 1968

Films:

The Pond, International Film Bureau, 1962
Nature's Way - Part I, The Inland Pond, Richardson's Wildlife Sanctuary, Inc. (free), 1969
Population Ecology, Encyclopedia Britannica
At Bullfrog Lake, King Screen Productions, 1970

Song:

The Froggie - AEOE Song Book

POND LIFE

- Checklist -

Below are ten things that you participated in while studying about pollution of our environment. Please circle the number that indicates how well you liked it. Do not put your name on the paper.

1 - Hated it
2 - Okay
3 - Great

1. Viewing films and filmstrips. 1 2 3
2. Estimating and measuring pond area. 1 2 3
3. Taking samples of pond life. 1 2 3
4. Studying samples (microscope, etc.) 1 2 3
5. Making wire baskets. 1 2 3
6. Setting up aquariums and terrariums. 1 2 3
7. The outdoor work. 1 2 3
8. Making sketches and/or drawings of pond area and life. 1 2 3
9. Working in teams. 1 2 3
10. Determining capacity of aquarium and terrarium for life. 1 2 3